Suid-Afrikaanse Tydskrif vir Geneeskunde : South African Medical Journal

Kaapstad, 13 Junie 1959 Deel 33 No. 24 Volume 33 Cape Town, 13 June 1959

THE TREATMENT OF THE LATE RESULTS OF CHRONIC NON-SPECIFIC PELVIC INFECTION*

PIERRE F. M. DU TOIT, M.B., CH.B., M.O. & G. (CAPE TOWN), M.R.C.O.G.

Department of Obstetrics and Gynaecology, University of Stellenbosch, and Karl Bremer Hospital, Bellville, Cape

The treatment of chronic pelvic infection is a vexing problem both to patient and doctor, for the patient is disgruntled because her symptoms do not improve, whilst the doctor is unhappy because he feels that his treatment is inadequate. Chronic pelvic infection is a common condition, and the general practitioner probably sees more cases than the gynaecologist does in private practice. The following are the in-patient statistics for the department of gynaecology of the Karl Bremer Hospital, Bellville, for the year 1957:

Total admissions	795
European admissions	455
Non-European admissions	340
Cases of chronic pelvic infection ..	124 = 15%
Endocervicitis	79%
Salpingitis	21%

These figures do not include tuberculous pelvic infection, and of course many cases of chronic pelvic infection seen in the out-patient department do not appear on this list either.

Twenty patients were admitted for infertility, and in 8 of these tubal occlusion was found, of inflammatory origin.

Late results of pelvic infection may be divided into 2 groups:

1. Where there is much granulation tissue with very little scar tissue, or none, and infecting *bacteria are still present*. These cases are very liable to recurrent attacks of acute or sub-acute pelvic infection.

2. Where there is only scar tissue and *no* bacteria present. This group is much larger than the first one.

Treatment will depend on several factors, viz. (1) the age of the patient, (2) the presenting symptom, and (3) the organ or organs involved. It will be either medical or surgical or a combination of both. Obviously, the younger the patient, the more conservative the treatment.

The best way to discuss treatment is to use the anatomical approach, and to discuss the treatment of each organ, even though in many cases the entire pelvic viscera are involved simultaneously.

THE CERVIX

Chronic endocervicitis is probably one of the commonest conditions found in general practice. It presents a problem in treatment because it is very resistant to therapy and has a great tendency to recur. The principle in treatment is to remove or destroy diseased tissue and to provide *adequate drainage*. Office treatment of chronic endocervicitis is grossly inadequate. The patient should be hospitalized and a dilatation of the cervical canal should be performed, with adequate endocervical cauterization with an electro-coagulation cautery. It is a wise precaution to give a full parenteral course of a suitable antibiotic. Subsequent dilatation at 2-weekly intervals for 6 weeks is desirable to ensure adequate drainage. As the presenting symptom is usually leucorrhoea, the patient should be warned that her discharge will be worse for the first few weeks after the cauterization.

In cases where the patient is over 35 years of age, and the lesion fails to respond to this treatment, a hysterectomy should be seriously considered. Partial amputation of the cervix is not advisable in cases of chronic endocervicitis, unless the patient has a cervical hypertrophy and is still young. One cannot eradicate all the endocervical sepsis by partial amputation of the cervix.

(*The Corpus Uteri.* Chronic non-specific endometritis is such a rare condition that it does not call for discussion here.)

THE UTERINE TUBES

Pathology

The infection may reach the tubes by ascending infection *via* the uterus (i.e. direct) or *via* the lymphatics from the vagina, vulva or cervix; or *via* the blood or by contiguity with adjacent pelvic structures, e.g. the bowel or appendix. The disease may take the form of hydrosalpinx or pyosalpinx, where the tube wall is excessively thinned, or there may be an interstitial salpingitis, with gross thickening of the wall. The *prognosis* for normal tubal function is poor in all three types, but is best in cases of pyosalpinx; one can recall cases of large pyosalpinx which have undergone complete resolution culminating in pregnancy.

With hydro- and pyosalpinx the abdominal ostia are always closed, because of conglutination of the fimbriae, whereas with interstitial salpingitis the ostium may be open.

A different type of tubal inflammatory pathology is that following post-abortal or postpartum uterine sepsis. Here the offending organism is the anaerobic streptococcus. The lesion is typical. The post-inflammatory response involves the interstitial part of the tube only, the rest of the tube being normal. There is thus cornual tubal occlusion, which is invariably bilateral, and the patient has no symptom other than secondary infertility.

Frequently the tubes, together with the ovaries, are adherent to the posterior uterine surface and to the peritoneum of the

* From symposium delivered at a meeting of the Cape Western Branch of the Medical Association of South Africa at Medical School, University of Cape Town, Observatory, Cape, 26 September 1958.

pouch of Douglas. This condition is responsible for the pelvic pain so often associated with chronic pelvic infection.

Treatment

Once scar tissue has formed, no medical treatment whatever will remove it. *Diathermy* to the pelvic organs, which is suggested by all the standard text-books, will not resolve scar tissue, and it is indicated only in cases where scar tissue has not yet formed, i.e. in group 1 (see above). Here, in combination with a suitable antibiotic, diathermy may hasten resolution and ease pain.

There are two chief *indications for operation:*

(*a*) *Infertility* (due to tubal occlusion). When the entire tube is damaged, as in hydrosalpinx or interstitial salpingitis, surgery is very disappointing, *salpingostomy* carrying only a 5% successful pregnancy rate. However, where only the cornual part of the tube is affected, as described above, *tubal implantation* carries a 20-30% successful pregnancy rate. It is of prime importance that the fimbriated end of the tube should be undamaged.

(*b*) *Pain.* Inflammatory tubal lesions are usually bilateral, and then unilateral tubal surgery is inadequate. Further it should be remembered that the disease process extends for the entire length of the tube, and that tubal resection *must* therefore always include the cornual or interstitial part—this applies especially in cases of pyosalpinx and interstitial salpingitis. If bilateral salpingectomy is indicated, it is desirable to conserve the ovaries, especially in younger patients. In those over 40 years old hysterectomy with bilateral salpingo-oophorectomy is the operation of choice.

THE OVARIES

Pathology. The ovaries are usually involved in conjunction with the uterine tubes. There is frequently a thickening of the capsule due to fibrosis, and this prevents ovulation, with the formation of atretic follicles. The ovary may be enlarged because of a polycystic state, the result possibly of disordered blood supply. The dense capsule may cause intracapsular tension, which may result in pain.

The normal hormonal function of the ovary is upset and dysfunctional menstruation results—usually polymenorrhoea or menorrhagia. Finally, because the ovary is usually fixed to the posterior aspect of the uterus in the pouch of Douglas, the symptom of dyspareunia is prominent.

Treatment

If the adherent ovaries cause dyspareunia, they should be mobilized by freeing all adhesions and then fixing them in an anterior position onto the anterior surface of the broad ligament. A Baldy-Webster type of ventral suspension should be performed on the uterus at the same time.

If infertility is present, and is thought to be due to non-ovulation, a wedge resection of the ovary sometimes meets with success.

In women over 40 years old bilateral oophorectomy with or without hysterectomy may be the only line of treatment.

It should be remembered, however, that there is no guarantee that surgical interference will completely cure pelvic pain of post-inflammatory origin, and this should be made very clear to the patient before embarking on operation. However, the type of patient upon whom surgery is contemplated has usually been treated *ad nauseum* by medical means with little or no success, and is only too willing to undergo operation.

HORMONE TREATMENT

Finally, I should like to draw attention to recent claims for the cortisone group of drugs, in combination with a suitable antibiotic, in the treatment of resistant chronic endocervicitis and the group-1 type of adnexal inflammation, i.e. the type with granulation tissue and viable bacteria. Wills *et al.*[1] have reported very successful results in small groups of patients with resistant chronic pelvic infection. Large adnexal masses have literally melted away in a matter of a few days. Briefly, the line of treatment is as follows:

A suitable antibiotic is given for 2 weeks *before* cortisone therapy is started—this is most important. Then 50-60 mg. of hydrocortisone is given daily for 1 week, the dose then being gradually reduced until this therapy has ceased by the end of 4 weeks. The antibiotic is naturally continued all through this time, and for at least 1 week *after* the hydrocortisone treatment has been discontinued. Throughout the treatment the patient is given a low-salt diet and fruit juice daily. No serious untoward manifestations have been reported to date. One must add that unless the treatment is well supervised the giving of cortisone in intra-abdominal infection may end in very serious or even fatal results. It must also be emphasized that the cortisone drugs have very little effect on scar tissue, so that no response can be expected in post-inflammatory scarring.

It may also be opportune to mention the role of the hormone *relaxin*, which has the property of softening ligaments, connective tissue and scar tissue. It has also been stated that this hormone gives good results in the type of case here discussed if given with antibiotics. Unfortunately the cost is prohibitive at present.

OPSOMMING

'n Pleidooi word gelewer om meer radikaal op te tree by die behandeling van chroniese bekkeninfeksie, aangesien die gebruik van antibiotika en diatermie van baie min waarde is in gevalle waar daar nog kieme teenwoordig is, en van geen waarde hoegenaamd nie in gevalle waar daar net hegweefsel is. Daar word ook gewys op die waarde van die kortisoon-groep middels en die moontlike waarde van die hormoon relaksien.

I wish to thank Dr. R. L. M. Kotzé, Medical Superintendent, Karl Bremer Hospital, for permission to publish the figures quoted in this paper.

REFERENCE

1. Wills, S. H. *et al.* (1958): Obstet. and Gynec., **11**, 122.

BOOKS RECEIVED : BOEKE ONTVANG

The Brain and Human Behaviour. Proceedings of the Association for Research in Nervous and Mental Disease, volume 36. Pp. xi+564. 200 illustrations. 53 tables. 120s. net. London: Baillière, Tindall and Cox Ltd. 1958.

Progress in Clinical Psychology. Volume III. Edited by Daniel Brower, Ph.D. and Lawrence E. Abt, Ph.D. Pp. vi+249. $7.75. New York and London: Grune and Stratton, Inc. 1958.

VAN DIE REDAKSIE : EDITORIAL

LONGEMBOLISME EN INFARKSIE

Daar is seker geen geneesheer wat nie die teleurstellende ondervinding gehad het dat 'n pasiënt wat mooi herstel het na 'n moeisame en ernstige siekbed of operasie, en in alle opsigte gesond voorkom, skielik neergevel word deur 'n longembolis nie. So dikwels is dit die onverwagte einde van 'n terapeutiese triomf, en weens sy skielike, noodlottige aanslag is enige behandeling dikwels onmoontlik. Selfs die oorsprong van so 'n embolis kan sluipend ontstaan, onder ons oë, in die diep are van die bene of pelviese pleksusse.

Die probleem van intravaskulêre trombose is nog onopgelos; daar is geen toets wat konstant sy waarde bewys het om 'n trombotiese neiging te voorspel nie, maar tog is sekere feite bekend, nl. dat die faktore wat intravaskulêre trombose bevorder een of meer van die volgende drie is: (1) 'n endoteliale letsel, (2) belemmerde bloedvloei, of (3) hiperstolbaarheid van die bloed.

Waar kardio-vaskulêre siektes die mees algemene oorsaak van dood vandag is, is die terminale gebeurtenisse die gevolg van intravaskulêre trombose of sy gevolge in die meerderheid van hierdie gevalle.[1]

Longembolisme en infarksie is ongewoon voor die ouderdom van 30-40 jaar, behalwe in obstetriese en hartpasiënte.[2] In algemene outopsie-reekse word longembolisme in 5-14% van gevalle gerapporteer, en in hartpasiënte is die voorkoms 30%, terwyl die voorkoms 48% in hartversaking is. Longembolisme kom meer dikwels in mediese as chirurgiese pasiënte voor, en infarksie volg embolisme in 50-60% van gevalle.[2]

Israel en Goldstein[3] wys daarop dat die diagnose van longembolisme, ten spyte van ons besef van sy kliniese belang (soos blyk uit die voorgaande syfers), meer dikwels misgekyk as gemaak word.

Anders as by algemeen voorkomende siektes in die geheel, is die diagnose van longembolisme feitlik uitsluitlik 'n kliniese diagnose, en daar is geen onfeilbare toets of kenmerkende teken vir sy voordoodse bevestiging nie.[3] Dikwels word die diagnose gemaak, maar die korrektheid kan nie bevestig word nie van weë 'n gebrek aan spesifieke maatreëls, veral nie as die pasiënt herstel as gevolg van ons behandeling nie.

Volgens Parker en Smith[2] kan longembolisme homself openbaar as skielike dispnee, substernale drukkende pyn, tachikardie; of tekens van serebrale ischemie soos rusteloosheid, angs, sinkopie of stuiptrekkings mag gevind word. Dikwels is die gevolg 'n skielike skokbeeld of regter-hartversaking, en longembolisme is 'n erkende oorsaak van skielike dood. Dit mag stil geskied sonder simptome of tekens, dit mag wisselende simptome toon, of dit kan herhaaldelik voorkom. Longinfarksie mag volg op hierdie kliniese beelde en word vermoed as daar pleuritiese pyn, röntgenologiese ondeursigtigheid, hemoptise, of 'n styging in die besinking en witbloedseltelling is. Hoes, dispnee en 'n onverklaarde koors mag dui op infarksie. Voorts meen hierdie skrywers[2] dat die volgende tekens en simptome trombo-embolisme van die long aandui: 'n onverklaarde koors of 'n koors wat nie reageer op chemoterapie nie. 'n Toename in die graad van hartversaking, paroksismale aritmieë, tachikardie, digitalis-toksisiteit en kwik-vaste edeem by pasiënte met hartversaking dui longembolisme aan. 'n Bloederige pleurale effusie, röntgenologiese voorkoms van longabses, of 'n onverklaarde leukositose moet 'n mens herinner aan die moontlikheid van longembolisme en infarksie.

Dit is soms moeilik en dikwels onmoontlik om longinfarksie van 'n pneumonie of atelektase te onderskei. Verskeie elektrokardiografiese tekens kan 'n mens die moontlikheid van longembolisme laat oorweeg, en die genoemde skrywers[2] tabuleer nege elektrokardiografiese veranderings na akute embolisme.

'n Nuwer laboratoriumtoets wat van waarde mag wees, veral waar longinfarksie teen 'n pneumonie of ander longsiekte, of miokardiale infarksie opgeweeg word, is die serumtransaminase toets. Longsiektes het gewoonlik, hoewel nie altyd nie, 'n normale SGO-T. Longinfarksie lewer waardes tussen 40 en 100 eenhede veral na die vierde dag, terwyl waardes bo 100 moontlik miokardiale infarksie aandui. Die toets is egter nie diagnosties nie, en baie oorvleueling tussen die diverse toestande kom voor.[4]

Voorkoming is tot dusver die beste behandeling; dit begin by veneuse tromboses en sluit in: (1) vroeë ambulasie en gereelde beenbewegings terwyl die pasiënt in die bed is, en (2) antistollingsterapie,[1] wat waarskynlik die belangrikste behandelingsmetode is. Die dra van elastiese kouse is van twyfelagtige belang. Trombolitiese middels is nog in die eksperimentele stadium.

By embolisme en infarksie is die gebruik van morfien of verwante pyndoders nodig en suurstof behoort toegedien te word, terwyl skok met noradrenalien beveg moet word. Antistollingsmiddels soos heparien, gevolg deur 'n coumarinderivaat, is nog ons waardevolste middels in hierdie gevalle.[2]

1. Barker, N. W. (1958): Circulation, **18**, 487.
2. Parker, B. M. en Smith, J. R. (1958): Amer. J. Med., **24**, 402.
3. Israel, H. L. en Goldstein, F. (1957): Ann. Intern. Med., **47**, 202.
4. Walsh, J. R., Humoller, F. L. en Gillick, F. G. (1957): *Ibid.*, **46**, 1105.

SYNTHETIC OXYTOCIN

Many of the substances found by biochemists in animals and plants are of practical importance in medicine and therapeutics. Some of those which are pharmacologically active are today synthesized in the laboratory and on a commercial scale. Oxytocin, which was originally extracted from the posterior lobe of the pituitary body, is amongst

the active biological substances that are now synthesized and frequently used in obstetrics.

A number of polypeptides are known to have a stimulant action on smooth muscle,[1] and amongst these there are two, viz. oxytocin and vasopressin, which are extremely active. They are both octapeptides, i.e. substances composed of 8 amino acids. The sources of these two hormones are the hypothalamic nuclei of the brain (principally the paired supraoptic and paraventricular nuclei), together with their non-myelinated axons, found most closely associated in the infundibular stem, and the posterior lobe of the pituitary body, in which these axons terminate. The current view is that the neurones of the hypothalamic nuclei produce the hormones, which travel along the axons to be finally stored in the posterior lobe, whence they are liberated into the blood stream as required. Vasopressin is apparently formed in the cells of the supraoptic nuclei, while oxytocin may be formed in the paraventricular nuclei. These hormones are also referred to as the neurohypophysial hormones, and it is believed that they are not only secreted by the neurones mentioned but that the rate of their release is controlled in response to changes in the osmotic pressure of the plasma, reflex excitation, and humoral stimulation. Vasopressin has a small oxytocic action of its own, while oxytocin has only a slight pressor and very little antidiuretic action. The two hormones have 6 amino acids in common and the remaining 2 amino acids are leucine and isoleucine in oxytocin, and arginine and phenylalanine in vasopressin. The synthesis of oxytocin was announced in 1953 by du Vigneaud and his collaborators.

The development of a synthesis on a commercial scale enabled the first synthetic oxytocin preparation (Syntocinon) to be placed on the market at the beginning of 1956, followed by the synthesis of a number of other polypeptides closely related chemically to oxytocin.[2] Syntocinon is an octapeptide consisting of a cyclic pentapeptide with a tripeptide side-chain. This synthetic oxytocin is of unvarying potency and completely free from vasopressin, and already many reports have been published in different parts of the world showing that there are no differences between this synthetic material and the 'natural' hormone when tested in women[3a–c] or on animals or animal tissues.[4] In physiological doses synthetic oxytocin, being free from vasopressin, has neither a pressor nor a depressor effect, but high doses sometimes produce a transient fall in blood pressure. Slight antidiuretic action would appear to be inherent in the oxytocin molecule. However, the relative freedom from an antidiuretic effect and the absence of a pressor effect are great advantages of the pure preparation, and are of importance in patients who have a tendency to water retention or toxaemia and in the rare cases where large intramuscular doses of oxytocin need to be given.

1. Gaddum, J. H. (1955): *Polypeptides which Stimulate Plain Muscle.* Edinburgh and London: Livingstone.
2. Boissonas, R. A. *et al.* (1956): Nature, **178**, 260.
3. (*a*) Bainbridge, M. N. *et al.* (1956): Brit. Med. J., **I**, 1133.
(*b*) Mayes, B. T. and Shearman, R. P. (1956): J. Obstet. Gynaec. Brit. Emp., **63**, 812.
(*c*) Francis, H. H. and Francis, W. J. A. (1956): Brit. Med. J., **I**, 1136.
(*d*) Friedman, E. A. (1957): Amer. J. Obstet. Gynec., **74**, 1118.
4. Konzett, H. *et al.* (1956): Schweiz. med. Wschr., **86**, 226.

THE PEUTZ SYNDROME: REPORT OF AN AFFECTED FAMILY

MICHAEL KATZEN, M.B., B.CH. (RAND), F.R.C.S. (EDIN.); R. GLYN-THOMAS, M.B., B.CH. (RAND), D.M.R.D. (R.C.P. & S. ENG.); M. F. BARRKMAN, M.B., B.CH. (RAND); and ANTHONY J. LEONSINS, M.B., B.CH. (RAND), F.R.C.S. (EDIN.)
Departments of Surgery and Radiology, University of Witwatersrand, Johannesburg.

In 1921, Peutz[1] described the syndrome of muco-cutaneous pigmentation and gastro-intestinal polyposis inherited through a Mendelian-dominant gene. An earlier report by Sir Jonathan Hutchinson[2] in 1896 of a similar disease in identical twins is probably an example of the same condition, although Peutz is generally credited with the first clear description of the syndrome. In 1949 Jeghers *et al.*[3] reviewed the literature, described the syndrome more fully, and added 10 cases of their own. Dormandy[4] has since published an authoritative review of the subject, adding 21 cases of his own. To date, we have been able to trace a total of 102 cases in the literature, including 14 affected families. Probably many cases are missed.

The following report of a family exhibiting the condition is presented:

CASE REPORTS

Case 1

First Admission. Miss E.E., aged 18, was admitted to the Johannesburg General Hospital on 17 August 1957 complaining of peri-umbilical abdominal colic for 32 hours. It was associated with vomiting and one day's constipation. Two months before admission she had experienced similar colic, which had disappeared after 2-3 hours. Except for the usual childhood illnesses, she had been quite well all her life.

On examination, she was seen to have a freckled face, which was not regarded as abnormal at the time. Her abdomen was soft and non-tender but showed slight fullness in the lower half. After 12 hours' observation, her abdomen became tender and a definite mass was palpable in the right iliac fossa. A laparotomy was then decided upon.

At operation an irreducible ileo-ileal intussusception was found 30 cm. from the ileo-caecal valve. Resection with end-to-end anastomosis was performed. A further search for polypi was not made at the time because the Peutz syndrome was overlooked and because it was considered that the intussusception had probably been caused by a Meckel's diverticulum in view of its site. The patient made an uneventful recovery.

Fig. 1. Diagrammatic illustration of the intussusception in cases 1 and 3 to indicate the situation of the polyp some distance proximal to the apex of the intussusceptum.

On section, the specimen showed a compound intussusception caused by a polyp which, surprisingly, was not at the apex of the intussusception (Fig. 1).

Second Admission. Miss E.E. was readmitted on 24 December 1957, complaining of abdominal colic and vomiting.

Our attention having in the meantime been directed

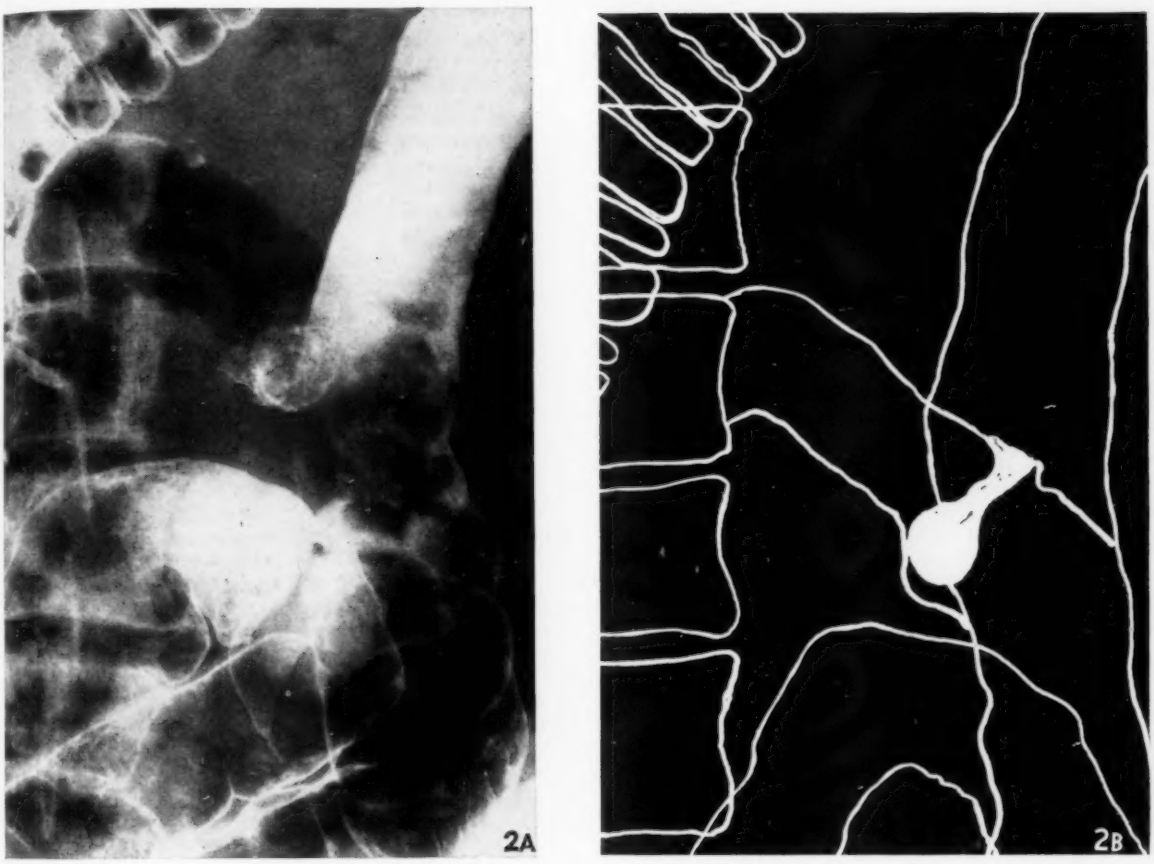


Fig. 2. Contrast barium enema (A), with diagrammatic representation (B), showing the polyp in the terminal ileum in case 2.

to the Peutz syndrome, we noticed that the patient had, in addition to the circumoral freckling, the classical melanin pigmentation of the lips and buccal mucosa. The abdomen was slightly distended but soft and non-tender and a diagnosis was made of sub-acute intestinal obstruction due either to further intussusception or adhesions from the previous operation. Signs and symptoms disappeared on gastric suction and intravenous fluids and she was discharged on the 4th day.

She has had no recurrence of the symptoms to date and barium series have revealed no further polypi.

In view of our findings it was decided to investigate the patient's family and it was found that a younger sister and the mother also had facial freckling and the classical mucosal pigmentation, although the mother's pigmentation had almost completely faded. The father and an elder sister had no pigmentation and they were not subjected to barium series at the time. The elder sister, however, was admitted to the gynaecological ward of the Johannesburg General Hospital in February 1958 complaining of pain in the left iliac fossa. Barium enema revealed no abnormality and she recovered without a definite diagnosis being made.

The family stated that the maternal grandmother, now dead, had similar pigmentation but as far as they knew had never suffered from gastro-intestinal disturbances.

Case 2

The younger sister of case 1, Miss C.E., aged 15, on barium meal and enema showed the presence of polypi in the terminal ileum and caecum (Fig. 2). She exhibited the classical buccal pigmentation (Fig. 3) and also gave a history of having had a rectal polyp removed as a young child. She had had no symptoms. At laparotomy on 12 March 1958 2 polypi were noted in the caecum, one in the ileum 30 cm. from the ileo-caecal valve, and one in the jejunum 30 cm. from the duodeno-jejunal flexure. The caecal polyps were removed through a caecotomy incision, while the ileal and jejunal polyps were removed by resection of about 10 cm. of bowel with end-to-end anastomosis in each case. An appendicectomy was also performed. The patient recovered uneventfully from this operation and sigmoidoscopy was performed on 22 March 1958. A polyp, 4 cm. from the ano-rectal junction, was removed and the rest of the rectum noted to be normal up to 18 cm.

The pathological report on these polypi (Dr. M. D. E. Manson) was as follows: 'Sections of these specimens show the characteristic features of benign adenomatous polypi. No evidence of malignant neoplasia has been observed in any specimen. Sections of the appendix show the presence of lymphoid hyperplasia and there is fibrosis of the peritoneum of the distal third. In addition, a small sessile polyp has been identified in the mucosa close to the tip'.

Case 3

The mother of case 1 and case 2, Mrs. A.M.E., aged 50, showed no abnormality on barium meal or enema and had had no symp-

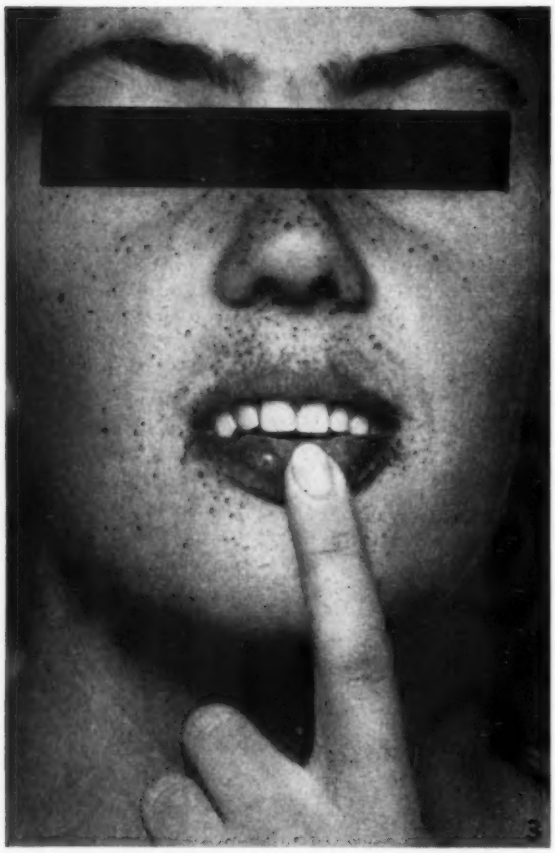


Fig. 3. Photograph of case 2 showing the buccal pigmentation.

toms up to this time. She stated that her pigmentation had faded appreciably over the years. She was admitted with a history of melaena and abdominal pain for 1 day.

A large, non-tender, round, mobile mass was palpable in the lower abdomen, and the patient was subjected to laparotomy on 6 May 1958. At operation, an irreducible intussusception at approximately the jejuno-ileal junction was resected. Further search for polypi revealed one in the jejunum proximal to the intussusception, 3 in the terminal ileum, one in the colon at the splenic flexure and 2 at the recto-sigmoid junction. These were all sessile and removed through multiple enterotomies.

The patient made a good recovery delayed slightly by mild wound sepsis. Histological section of the polypi from both the large and small bowel showed them to be simple. No evidence of malignant neoplasia was observed. The intussusception was compound, as in case 1, with the polyp situated some distance from the apex.

DISCUSSION

1. *Heredity*

The 102 cases of Peutz syndrome we have found reported in the literature include 14 families manifesting the disease. Our family is illustrated genetically in Fig. 4. This conforms to the previously reported patterns of transmission and it is probable that, although all the sufferers in this family were females, the disease is inherited as a Mendelian dominant which is not sex-linked.[3] Sporadic cases may possibly result from gene mutation.

2. *Pigmentation*

Our cases exhibited the classical melanin pigmentation on and around the lips and on the buccal mucosa. No pigmentation was noted on the palate, gums, extremities or other sites reported by other authors.[3, 5] In the two daughters there were, in addition, numerous light-brown freckles on the face. All three patients were fair-skinned, in contradistinction to the dark complexion of most reported cases. The pigmentation in the mother was barely discernible as it had faded over the years. This agrees with Peutz's observation[1] concerning the disappearance of the pigmentation with advancing years.

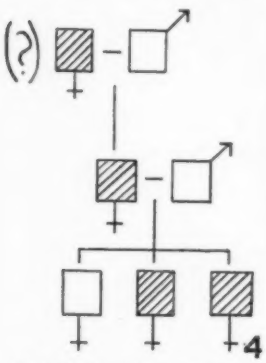


Fig. 4. The shaded squares represent members of the family manifesting the Peutz syndrome. There is no conclusive proof that the maternal grandmother suffered from the disease.

3. *Distribution of Polypi*

Cases 2 and 3 showed widespread distribution of polypi in the small and large bowel. An essential part of the syndrome is the presence of polypi in the small bowel, but over half the reported cases showed polypi in the large bowel as well. Polypi have been found in the stomach[3, 6] and case 2 showed a polyp in the vermiform appendix.

A distinction must be made between this syndrome and familial polyposis coli, where polypi are not found in the small bowel and there is no oral pigmentation.

4. *Presentation*

Intussusception is the classical complication of the condition (cases 1 and 3) and may be progressive (as in our cases) or transient. Case 1 gave a history of one previous attack of colic but many reported cases give histories of intermittent colic and the presence of transient tender 'lumps' in the abdomen extending back over many years. The clinician may notice these lumps on abdominal examination and be surprised to find they have disappeared in hours or even minutes.

The syndrome may also present with diarrhoea, intestinal bleeding or prolapsed rectal polyp, or, to the dermatologist, as oral pigmentation.

5. *Radiology*

In all cases showing the typical pigmentation meticulous radiological investigation should be made of the stomach and the small and large bowel.

In the stomach, polypi are best demonstrated by prone and supine barium mucosal studies, when they are seen as rounded filling defects disturbing the normal rugal pattern. Gastric polypi are not infrequently found in barium-meal examinations and, when demonstrated, the remainder of the gastro-intestinal tract should be examined with a high index of suspicion.

The duodenum is readily examined by the use of a compression cone and serial films. Between the duodeno-jejunal flexure and the caecum, however, polypi are notoriously difficult to demonstrate and, for this reason, Bailey[7] believes that radiology may be of little help since, in one of his cases, X-ray examinations were reported as negative although a

pedunculated jejunal polyp was demonstrated at operation. This also occurred in one of our patients (case 3).

A small quantity (4 oz.) of barium cream is administered orally and its progress through the small bowel observed at ¼-hourly intervals by films and, if necessary, fluoroscopy. Polyps will be seen as small radiolucent filling defects. Gas bubbles may cause some confusion but, apart from this, the only condition likely to be confused with polyposis is pneumatosis cystoides intestinalis and here the filling defects tend to lie in the bowel wall rather than in the lumen and show on plain films as multiple translucencies.

Intussusception may be precipitated by barium meal[5, 8] and we devised a special technique of investigation for patients with a history suggesting recurrent obstruction. A water-soluble, opaque medium (urografin 76%) was used and 60 c.c. of it was administered through a naso-gastric tube with the tip lying within the duodenum. The small bowel was then gently insufflated with air and the progress of the medium plus air observed under the screen at short intervals and films taken approximately every 15 minutes. This method was used in case 2, producing a superb double-contrast demonstration of small-bowel detail, but no polypi. We intend to use carbon-dioxide for future insufflation.

During a phase of intussusception, one may, on horizontal-ray films, see dilated loops of small bowel with fluid levels due to small-bowel obstructions. The demonstration of a 'beak'[9] gas shadow may enable one to diagnose intussusception on plain films.

In large-bowel examination, the most important single factor is the meticulous preparation and cleansing of the bowel to avoid the presence of faecal matter. Thereafter the method of examination used varies in different centres. The method we employ is the double-contrast barium enema. After evacuation by the patient of most of the barium suspension used for the normal enema examination, the bowel is insufflated with carbon dioxide[10] or nitrous oxide gas, and the polypi are shown either as single filling defects or pedunculated masses projecting into the bowel lumen (Fig. 2). Where preparation has been adequate polyps of 0·5 cm. and more should be demonstrable. Gas and barium will usually outline the terminal part of the ileum and enable polypi to be demonstrated there. The use of soluble gases for insufflation is preferred to air because the danger of gas embolism is less and the patient suffers less discomfort as the gas is rapidly absorbed. Differentiation of faecal material from polypi forms the chief problem in colonic examination, but gas bubbles and oil globules remaining from oily aperient administration may cause difficulty as well.

Gianturco[11] and Wietersen[12] are enthusiastic about the high-kilovoltage single-contrast method of demonstrating large-bowel polypi, but so far we have had little experience of this technique.

6. *Pathology*

The polypi in the Peutz syndrome are adenomata. They may be sessile or pedunculated. They seem to be capable of eruption at different ages. The naked-eye growths do not appear synchronously[4] and normal-looking gut may separate polyp-bearing segments. Many years may elapse between the appearance of new crops of polypi and they may even regress spontaneously, particularly in the colon,[13] or break off and be evacuated.

Bailey[7] has analysed 67 reported cases in which there was adequate histological knowledge of the polypi and found that malignant change had occurred in 24%. The polypi were situated in the small intestine in 19% of the 67 cases. Dormandy,[14] however, casts doubt on the pre-malignant nature of these tumours, at least in the small bowel. He states, 'Histologically many show the classical features of an early well-differentiated adenocarcinoma, especially apparent invasion of the submucosa and muscularis, but the clinical follow-up always casts doubt on the pathological diagnosis.' We can, in fact, find no recorded cases where the patients diagnosed as having adenocarcinomata actually died as a direct result of them. Dormandy[15] also states, 'I think that the origin of many small intestinal polyps from the deeper layers of the bowel wall accounts for most histological diagnoses of malignancy. Examining serial sections of 2 operation and post-mortem specimens of small bowel I found a number of areas of microscopic intramural adenomatosis in parts of the gut which looked normal or almost normal to the naked eye. These microscopic adenomas vary in complexity from simple "vesicles" to more substantial nodules; they tend to be grouped together (often around one or two naked-eye polyps); they interrupt the continuity of the muscle coat; and may show some degree of cellular irregularity (or immaturity) and great mitotic activity. The apparent "invasion" of the deeper layers of the bowel wall by large naked-eye polyps would seem to reflect their origin rather than an ominous late development in their natural history.'

No proof, other than Bailey's reference,[7] can be found of the malignant potential of the large-bowel adenomata. One might presume, however, that these, in contradistinction to the small-bowel adenomata, harbour the accepted capability of all large bowel polypi to undergo eventual malignant change as in familial polyposis coli.[16] One can, however, only surmise on this point.

The intussusceptions in cases 1 and 3 were both compound and the polypi were not found at the apex of the intussusception. This compares well with Wardill's observations,[17] in which he showed that mere traction upon the polyp by intestinal movements does not account for the formation of the intussusception. He postulated that the tumour acts as a foreign body and produces spasmodic contraction of the gut around it, with inhibition of the part immediately distal. Peristalsis then invaginates the proximal into the distal bowel slightly ahead of the polyp, which is carried onwards though not at the apex of the intussusception.

Intussusception may occur in polyposis without a naked-eye polyp appearing in the intussusception. Dormandy[15] surmises that areas of micro-adenomatosis possibly interfered with normal peristalsis and initiated abnormal waves of contraction.

7. *Treatment*

Operation is indicated in the presence of complications such as excessive bleeding or intussusception, although many intussusceptions obviously resolve spontaneously. A problem arises when a case is proved to be one of polyposis on barium series without symptoms or when symptoms occur intermittently. Many authors advocate prophylactic clearance of small-bowel polypi in the Peutz syndrome.[5, 7, 18, 19] The points in favour of clearance are:

(*a*) These patients may die from the effects of multiple intussusceptions or anaemia.

(*b*) It is thought by some[7] that these tumours are pre-

malignant. This is probably an untenable argument in the light of Dormandy's observations[14, 15] and may therefore be discounted.

The points against clearance are:

(*a*) The distribution of the polypi may be too extensive to allow of adequate removal while leaving behind enough bowel for adequate physiological function.

(*b*) These tumours grow sporadically at various ages and removal of one crop does not guarantee that a further growth in another section of the bowel will not occur.

(*c*) These tumours are not all visible to the naked eye and many are likely to be left behind at operation.

A prophylactic clearance was attempted in case 2 because our interpretation of the available literature at the time seemed to suggest that these small-bowel polypi were pre-malignant. In the light of our further reading[4] it was probably an inadvisable procedure.

When these adenomata occur in the large bowel, however, the outlook is somewhat different. Although there is no incontrovertible evidence to show that they are pre-malignant when situated in the large bowel as in familial polyposis coli, it is probably safer to excise them. Total colectomy seems a most radical procedure to undertake when the hazards of leaving these tumours alone is not established and we venture to suggest that local resection or excision with careful post-operative follow-up is probably the procedure of choice.

SUMMARY

A report is presented of 3 members of a family manifesting the Peutz syndrome.

The salient features of the syndrome are discussed, with particular reference to the pathology, clinical presentation, radiological investigation, and treatment.

We wish to thank Dr. K. F. Mills, Medical Superintendent, Johannesburg General Hospital, for permission to publish these cases, Mr. J. A. Douglas, under whose care cases 1 and 2 were admitted, Mr. S. Skapinker, who performed the operation on case 3, and Prof. D. J. du Plessis for his helpful advice in the preparation of this paper.

ADDENDUM

Since the completion of this article a report of a case of the Peutz syndrome which developed a proved adenocarcinoma in a polyp-bearing area of small bowel has appeared in the literature.[20] We believe this does not invalidate the views expressed concerning the pathology and treatment of the condition but serves to illustrate the extreme rarity of malignant change in the small bowel adenomata.

REFERENCES

1. Peutz, J. L. A. (1921), Ned. Maandschr. Geneesk., **10**, 134.
2. Hutchinson, J. (1896): Arch. Surg. (Lond.), **7**, 290.
3. Jeghers, H., McKusick, V. A. and Katz, K. H. (1949): New Engl. J. Med., **241**, 993 and 1031.
4. Dormandy, T. L. (1957): *Ibid.*, **256**, 1093, 1141 and 1186.
5. Pool, R. M., Guice, C. E. and Farringer, J. L. (1955): Ann. Surg., **141**, 664.
6. Tanner, N. C. (1951): Proc. Roy. Soc. Med., **44**, 405.
7. Bailey, D. (1957): Brit. Med. J., **2**, 433.
8. Behrer, M. R. (1951): J. Pediat., **38**, 641.
9. Middlemiss, J. H. (1955): Brit. J. Radiol., **28**, 257.
10. Levene, G. (1957): Radiology, **69**, 571.
11. Gianturco, C. (1950): *Ibid.*, **55**, 27.
12. Wietersen, F. K. (1957): Amer. J. Roentgenol., **77**, 690.
13. Andren, L. and Frieberg, S. (1956): Acta radiol., **46**, 507.
14. Dormandy, T. L. (1957): *Modern Trends in Gastro-enterology*. London: Butterworth.
15. *Idem* (1958): Proc. Roy. Soc. Med., **51**, 426.
16. Dukes, C. E. (1952): Ann. Roy. Coll. Surg. Engl., **10**, 293.
17. Wardill, W. E. M. (1925): Brit. J. Surg., **13**, 158.
18. Vary, E. P. (1956): Amer. J. Surg., **91**, 152.
19. Camp, O. B. and Lesser, A. (1952): Ann. Surg., **136**, 1034.
20. Beinfield, M. S. and Changus, G. W. (1958). Gastroenterology, **35**, 534.

SPONTANE SUBARACHNOÏEDE BLOEDINGS

DEEL II: KONSERWATIEWE BEHANDELING

H. P. WASSERMANN, B.Sc., M.B., CH.B. (PRETORIA) en A. J. BRINK, M.D. (PRETORIA), M.R.C.P. (LOND.)

Departement Interne Geneeskunde, Universiteit Stellenbosch, Degenerasie Siektetoestande Groep, W.N.N.R., Karl Bremer-Hospitaal, Bellville, Kaap

Sedert spontane subarachnoïede bloedings chirurgies behandelbaar geword het, het die literatuur oor alle aspekte van die probleem toegeneem. Volgens Walker[1] is die beskikbare gegewens tans egter so onvolledig en bevooroordeel dat: ‚it only compounds the confusion of an already complex issue'.

In die eerste deel van hierdie artikel[2] is die kliniese beeld by 30 gevalle beskryf, soos gevind in 'n prospektiewe studie oor 'n tydperk van 2 jaar. 'n Vergelykende studie van die voorkoms by rasse en van moontlike etiologiese faktore word elders gerapporteer.[3] Die duur van die xantochromie by 'n paar vroeë gevalle in ons reeks[2] het ons genoodsaak om spesiale aandag aan die serebrospinale vogveranderings in hierdie toestand te gee, en dié veranderings word dan ook in hierdie artikel bespreek, veral in soverre dit die behandeling van die toestand raak. Daar word ook verwys na die angiografiese gegewens soos gevind in die vergelykende studie,[3] en materiaal uit die Groote Schuur-Hospitaal, Kaapstad, Algemene Hospitaal, Johannesburg, Coronation-Hospitaal, Johannesburg en die Karl Bremer-Hospitaal, Bellville, word gebruik.

METODE

Alle pasiënte met subarachnoïede bloedings (uitgesonderd dié gevalle te wyte aan trauma of neoplasma), toegelaat oor 'n tydperk van 2 jaar (Julie 1956 tot Julie 1958) is klinies bestudeer.[2] Lumbaalpunksie is by toelating gedoen en sover moontlik elke tweede dag daarna. 'n Quekenstedt-toets is nie gedoen nie aangesien dit potensieel gevaarlik geag is. 'n Reeks buisies met verskillende konsentrasies kaliumbikromaat is voorberei om die graad van xantokromie te bepaal. 20% kaliumbikromaat kom op hierdie skaal ooreen met ‚5+', terwyl gedistilleerde water 0 (nul) voorstel. Op hierdie skaal is 1+ nog duidelik xantokromies vir alle waarnemers.

RESULTATE

1. *Druk*

Baie min manometriese studies in die toestand word in die literatuur vermeld, en die druk word gewoonlik beskryf as ‚verhoog', ‚hoog', of in sommige gevalle, ‚laag'.[4-7] Walton[8] se reeks sluit 213 gevalle in by wie daar kommentaar oor die vogdruk gemaak is.

Tabel I toon die drukke soos by opvolging gevind by:

A. 3 gevalle met 'n lae aanvanklike druk, en

B. die gevalle waarby die druk-veranderings opgevolg kon word tot kliniese herstel.

Al hierdie drukmetings is gemaak in pasiënte met voldoende sedasie, en by wie daar geen kliniese rede was om 'n herhaling van bloeding te vermoed nie.

Uitgesproke wisseling van serebrospinale vogdruk kan voorkom, bv. 1 pasiënt met 'n aanvanklike druk van 80 mm.

TABEL I. MANOMETRIESE STUDIES VAN DIE SEREBROSPINALE VOG

A *Tydsverloop van ictus tot toelating*	*By toelating*	*Dae na toelating*									
		2	4	6	8	10	12	14	16	18	20	20+
10 ure ..	20	—	80	—	—	—	—	—	—	—	110	—
1 dag ..	60	—	—	100	—	100	—	—	—	—	140	—
6 dae ..	80	—	—	210	—	120	140	120	—	—	120	—

B *Tydsverloop van ictus tot toelating*	*By toelating*	*Dae na toelating*									
		2	4	6	8	10	12	14	16	18	20	20+
1 dag ..	150	200	180	60	120	150	130	130	130	50	—	—
2 dae ..	170	100	—	—	—	—	—	100	—	—	40	*
4 ure	170	200	—	—	150	200	190	160	—	—	—	—
3 dae ..	180	—	—	160	240	180	180	—	—	—	—	†
1 dag ..	240	—	200	—	—	—	100	—	180	—	—	—

A. 3 gevalle met 'n lae aanvanklike druk.
B. Gevalle waarby drukveranderinge opgevolg kon word tot kliniese herstel.
* 165 op die 56ste dag. † 210,150 op die 24 en 26ste dag.

het 6 dae later 'n druk van 210 mm. getoon. Hierdie wisselinge in druk mag 'n belangrike invloed op die geskeurde bloedvat hê. Groot wisselinge in vogdruk kom by normale persone voor en werkers deur Davson[9] aangehaal, het getoon dat hoes en nies die serebrospinale vogdruk geweldig omhoog laat skiet (25-280 mm.). Afdrukpogings met ontlasting en emosionele faktore veroorsaak ook 'n merkbare drukstyging van die serebrospinale vog. Haug[10] meen dat as die druk oor 'n periode van 10 minute gemeet word, waardes verkry word wat herhaalbaar is binne 30 mm. soutoplossing van dag tot dag by normale persone.

Die enigste wyse waarop ons skynbaar tans hierdie drukskommelings tot 'n minimum kan beperk, is om te poog om 'n basale toestand te skep deur absolute rus in die bed, voldoende sedasie en 'n poging om deur gerusstelling die emosionele toestand van die pasiënt gelykmatig te hou. Die uitwerking van hoes behoort aandag te geniet deur longinfeksies te voorkom met profilaktiese antibiotiese behandeling en deur hoesonderdrukkende middels te gebruik. Afdrukpogings met stoelgange moet verminder word deur die gebruik van ligte lakseermiddels. Magnesiumsulfaat, parenteraal toegedien, het blykbaar nie 'n groot uitwerking op die drukskommelinge gehad nie, hoewel die sederende effek van belang mag wees. Ons het barbiturate en/of chlorpromasien die nuttigste kalmeermiddels gevind, hoewel paraldehied nodig was vir die beheer van stuiptrekkings (3 uit 30 pasiënte).

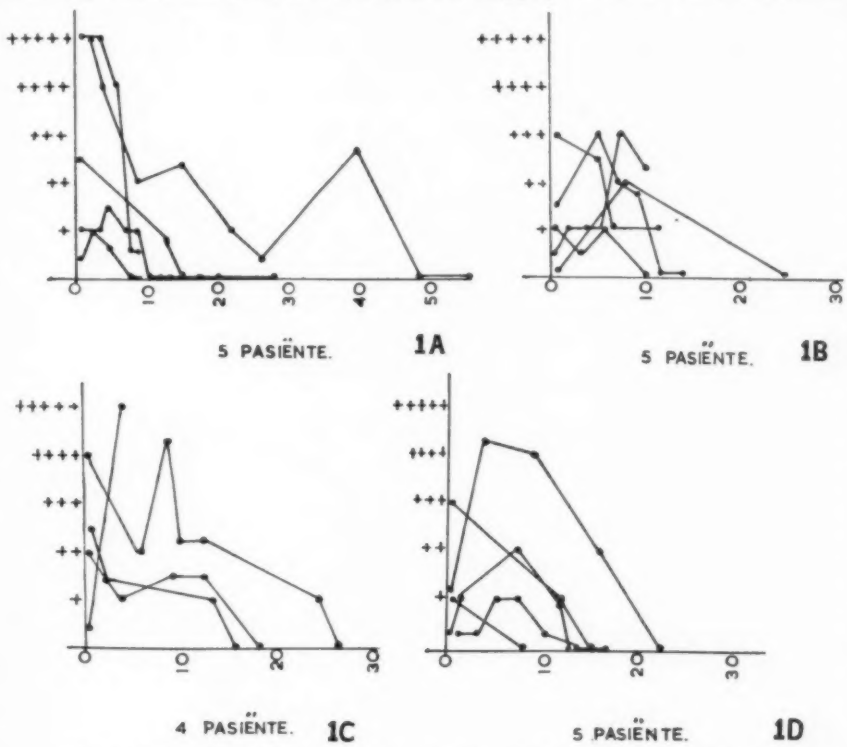
2. *Bloed*

Die bloedverkleuring het min belang by die konserwatiewe behandeling. Die gemiddelde duur van die aanwesigheid van makroskopiese bloed in die vog was 6 dae, hoewel in 'n paar gevalle die bloed reeds voor die 3e dag verdwyn het. In 1 geval is 'n tipiese geskiedenis verkry en 'n subhialoïede bloeding het die diagnose bevestig; maar op die 3e dag na die iktus toe lumbaalpunksie gedoen is, is 'n normale vog gevind met geen bloed of xantokromie nie. Angiografie het 'n klein aneurisma naby die sinus caroticus getoon.

Die kriteria van McMenemey[11] is gebruik om 'n ware subarachnoïede bloeding te onderskei van bloed wat die gevolg mag wees van trauma deur die lumbaalpunksie.

3. *Xantokromie*

Die resultate gevind by 19 pasiënte wat opgevolg kon word tot by hulle kliniese herstel of dood, word in Afb. 1 uiteengesit. Ons het gevind dat die gemiddelde tyd vir xantokromie om heeltemal te verdwyn, 16 dae was. In 1 geval was xantokromie (1+) teenwoordig op die 3e dag maar afwesig op die 7e dag, terwyl in 'n ander dit teenwoordig was op die 40ste dag maar afwesig op die 49ste dag. As xantokromie begin verminder, verdwyn dit spoedig soos duidelik uit Afb. 1 blyk. Gevalle met 'n wisselende graad van xantokromie, in die afwesigheid van makroskopiese bloed of 'n kliniese aanduiding van 'n herhaling van



Afbs. 1 *a-d* Xantokromie by 19 pasiënte in terme van die graad en duur in dae daarvan.

die bloeding, beskou ons dus as gevalle wat nog lekkasie van bloed het.

Ons het ook gevind dat hoofpyn as 'n simptoom nou korreleer met die teenwoordigheid van xantokromie; die hoofpyn het gewoonlik gelyktydig met die xantokromie verdwyn.

In 'n paar gevalle wat asimptomaties was teen die tyd dat 'n helder vog verkry is, is die pasiënte toegelaat om te sit langs die bed. Dit het beteken dat in 1 geval die pasiënt op was op die 8ste dag, in 2 gevalle teen die 10e dag en in 1 geval die 15e dag. In nie een van hierdie 4 was daar 'n terugkeer van bloed of xantokromie in die vog nie. In 1 geval was angiografie normaal, in 1 geval is 'n baie klein aneurisma op die linker carotis interna gedemonstreer, terwyl 2 gevalle angiografiese ondersoek geweier het. Een van die laasgenoemde pasiënte is ongeveer 1 jaar later gesien, nog steeds vry van hoofpyn en enige ander simptome.

BESPREKING

Hoewel Wechsler en Gross[23] beweer dat konserwatiewe behandeling geen behandeling is nie, is dit klaarblyklik oordrewe, en volgens Walton[8] het konserwatiewe behandeling sowel as chirurgiese behandeling sy plek. Hoewel baie bydraes onlangs gelewer is ten opsigte van die chirurgiese behandeling in hierdie pasiënte, het relatief min studies verskyn insake die prognose van die toestand.[15] Prognose word gewoonlik bespreek as ‚onmiddellik' en ‚laat'. Deur ‚onmiddellik' word bedoel die eerste 2 tot 3 maande van die siekte, en deur ‚laat' die periode van maande of jare wat daarop mag volg. 'n Sterftesyfer van 33-55% word gewoonlik aangegee gedurende die eerste 3 maande. Die sterftesyfer verskil waarskynlik in verskillende gemeenskappe en, soos ons elders vermeld,[3] is die sterfte in Suid-Afrika ongeveer 50% in die gebied van die Witwatersrand, terwyl dit in Kaapstad en omstreke ongeveer die helfte (26%) is. Hierdie faktore moet oorweeg word in die lig van chirurgiese sterftesyfers wat wissel van 6 en 8%[12,13] tot 33%.[14] Die prognose van pasiënte wat oor 'n tydperk van 13 jaar konserwatief behandel is, word deur Braakman[15] op 28% sterfte in die eerste 3 maande gestel. Benewens ons Kaapstadse reeks is Ask-Upmark en Ingvar[16] se reeks die enigste wat ook so 'n lae sterftesyfer in die eerste 3 maande aangee (28%). Die goeie prognose (langtermyn) in Braakman[15] se reeks sluit gevalle met bewese aneurismas in.

Hierdie bevindings dui daarop dat konserwatiewe behandeling krities heroorweeg moet word en kandidate vir chirurgiese behandeling noulettend gekeur moet word.

Rus in die Bed

Langdurige rus in die bed word oor die algemeen aanbeveel, maar die waarskynlikheid van komplikasies soos pneumonie, longembolisme en druksere word daardeur verhoog. Die ervaring met die paar pasiënte in ons reeks wat toegelaat is om vroeg te sit, insluitende die verdere verloop van hul toestand sonder insidente, mag daarop dui dat herhaalde lumbaalpunksies mag help by die seleksie van pasiënte by wie vroeë ambulasie wenslik is. Dit sluit dan veral diegene in met faktore wat tot longinfeksie of embolisme sou predisponeer, bv. spatare en chroniese brongitis. Een geval in ons reeks is oorlede aan longembolisme 6 dae na toelating (outopsie-diagnose). Andersyds, help rus in die bed natuurlik om 'n basale toestand te skep en waarskynlik om drukskommelings van die serebrospinale vog te beperk. Die algemene mening vandag skyn te wees dat 'n tydperk van 6-8 weke van rus in die bed aangewese is,[8] maar ons meen dat hierdie periode moontlik verkort kan word in gevalle wat 'n gunstige verloop toon. As bykomstige faktore vroeë ambulasie wenslik maak, mag herhaalde lumbaalpunksies aandui wanneer die pasiënte toegelaat kan word om te sit.

'n Pasiënt wat in koma is, behoort die gewone sorg en aandag te geniet om 'n ope lugweg te behou en die vog- en elektroliet-balans te bewaar. Komateuse gevalle met uitgesproke glukosurie lewer dikwels moeilikheid met die diagnose veral as hulle gedehidreer is en as braking voorgekom het met daaropvolgende asidose. Nekstyfheid is gewoonlik 'n indikasie vir lumbaalpunksie waardeur die diagnose bevestig kan word.

Hipertensie vereis verder kommentaar. Soos in die eerste deel van hierdie artikel aangetoon,[2] het 7 pasiënte (23·3%) 'n hipertensiewe lesing getoon by opname, maar dit het later tot 'n normotensiewe waarde gedaal (bv. 240/140 mm. Hg. by toelating, gestabiliseer vanaf die 3e dag om en by 150/80 mm. Hg.). Dit dui daarop dat bloeddruklesings wat verkry is by toelating weer later gekontroleer moet word voordat 'n pasiënt as hipertensief bestempel word. Linker-ventrikulêre hipertrofie, soos by kliniese ondersoek vasgestel of elektrokardiografies aangetoon, dien om die 2 groepe te onderskei. Dit het 'n terapeutiese implikasie in soverre 'n mens geneig sou wees om die bloeddruk in 'n hipertensiewe pasiënt te verminder, terwyl die tydelike hipertensiewe toestand 'n refleks-aanpassing tot verhoogde intrakraniale druk mag wees. Meer gekontroleerde studies is egter nodig in hierdie opsig.

As ons die gevalle met subarachnoïede bloedings volgens Holmes se klassifikasie[17] bespreek, kan ons dit doen in die lig van angiografiese studies en die bydrae van herhaalde lumbaalpunksies:

Klassifikasie

Groep I. Fatale gevalle waar die dood binne 24 uur intree as gevolg van kompressie van die midbrein of die medulla. Hierdie gevalle word maklik herken aan hulle aktief-progressiewe agteruitgang en die enigste kans tot terapie hier sou wees om carotis-onderbinding in die nek te probeer as daar lateraliserende tekens teenwoordig is. Dit is in die geval van 1 van ons pasiënte gedoen by wie 'n herhaling van bloeding op die 4e dag geskied het, en wat toe hierdie vinnige, progressiewe agteruitgang getoon het. 'n Angiogram wat toe geneem is toon 'n groot aneurisma op die A. carotis interna links en onderbinding is in die nek gedoen. Die pasiënt is egter die volgende dag oorlede.

Groep II. 'n Meer geleidelike verloop wat oor 'n paar dae strek tot ongeveer 2 weke. Hierdie gevalle toon 'n toename in xantokromie selfs in die afwesigheid van bloed, of 'n wisselende graad van xantokromie met die herverskyning van rooiselle sigbaar na afswaaiing. Hierdie gevalle vereis onmiddellike angiografie en chirurgiese behandeling. Baie dikwels egter toon angiografie nie die aneurisma nie as gevolg van lokale vasospasme,[18,19] maar in 5·1% van ons angiografiese reeks[3] het angiografie wel 'n subdurale uitbreiding van die bloeding getoon. In 1 van hierdie gevalle waar so 'n subdurale bloeding met 'n lewensreddende gevolg verlig is, het 'n herhaling van die angiogram 'n naby-geleë aneurisma getoon wat toe onderbind is. Die bevinding van so 'n subdurale uitbreiding laat chirurgiese behandeling toe om

die pasiënt deur die noodtoestand te loods en hom in groep III te plaas.

Groep III. Gevalle wat herstel van die eerste bloeding, maar wat sterf by 'n herhaling, gewoonlik gedurende die 2e week van hul hospitaalverblyf. Hierdie gevalle behoort angiografies bestudeer te word en chirurgies behandel te word in die stilperiode voor die herhaling van die bloeding, en hier meen ons dat lumbaalpunksie en 'n studie van die xantokromie behulpsaam is. Volgens Ballantine en Klein[20] is dit ,die toestand van die pasiënt eerder as 'n spesifieke wag-periode na die bloeding wat die optimum tyd vir chirurgiese ingreep behoort te bepaal'. Dit is duidelik uit Afb. 1 dat as xantokromie begin verminder, dit spoedig verdwyn (soms binne 48 uur). Ons het gevind dat die kliniese beeld min of meer parallel verloop met die graad van xantokromie. Dit wil dus voorkom of die optimale tyd vir angiografiese ondersoek en chirurgie op dié tydstip is wanneer die vog helder word of minstens 'n ligterwordende xantokromie toon. Dit sou dan dui op angiografie teen ongeveer die 15e dag, maar help by individuele beslissings aangesien xantokromie in sommige gevalle reeds tussen die 3e en 7e dag verdwyn het.

Groep IV. Gevalle sonder bewussynsverlies of slegs kortstondige bewussynsverlies by die begin met gunstige verdere verloop. Baie van die reekse wat chirurgiese behandeling ontvang het, bestaan uit hierdie groep, maar daar is min voordeel in die chirurgiese behandeling bo die konserwatiewe behandeling.[17] Nietemin meen ons dat angiografie tog in hierdie gevalle uitgevoer moet word, aangesien dit reeds gevind is dat wanneer bilaterale carotis-angiografie geen letsel toon nie, die prognose relatief goed is.[21,22]

Hierdie gevalle laat dus 'n meer tydsame beslissing toe oor wanneer die ondersoek gedoen moet word.

OPSOMMING

1. In die lig van die gunstige sterftesyfer in Ask-Upmark en Ingvar se reeks[16] (28%), is dit van belang dat die sterfte in 88 pasiënte in die Kaapstadse gebied ooreenkom hiermee[3] (26·8%); en in gevalle wat konserwatief behandel is en wat hy 13 jaar lank opgevolg het, vind Braakman[15] die sterfte by sowel onmiddellike as langtermyn-opvolging in hierdie opgewing (28%) in 196 pasiënte. Aangesien chirurgie 'n sterfte dra wat wissel van 6 tot 33% in verskillende reekse[12-14] (wat uit 'n baie heterogeen geselekteerde groep pasiëntemateriaal bestaan), is dit waarskynlik belangrik dat konserwatiewe behandeling oorweeg moet word in gebiede met die laer sterfte.

2. Waarskynlik is die bedoeling met konserwatiewe behandeling die vermindering van drukwisselinge van die serebrospinale vog in gevalle met subarachnoïede bloeding, en die keuring van die pasiënt en die besluit oor die optimale tyd vir chirurgiese ingreep.

3. Deur die gevalle te klassifiseer volgens Holmes[17] se voorstelle, meen ons dat herhaalde lumbale punksie en bepaling van die graad van xantokromie hulp verleen by hierdie keuring. Dit laat ook die uitsoek van gevalle toe by wie langdurige rus in die bed ongewens is.

SUMMARY

1. In view of the favourable mortality rate reported by Ask-Upmark and Ingvar[16] (28%), as compared with other series, it is of interest that the mortality rate in 88 patients in the Cape Town area of South Africa, corresponds to this figure[3] (26·8%), and that in a 13-year follow-up study Braakman[15] found both the immediate and long-term prognosis in 196 patients in this vicinity (28%). As surgery carries a mortality varying from 6 to 33%[12-14] in material selected on a heterogeneous basis it would seem that in areas with such a relatively low mortality rate, conservative treatment should be considered.

2. Probably some of the chief aims of conservative treatment are to minimize the fluctuation of pressure of the cerebrospinal fluid in cases with spontaneous subarachnoid haemorrhage, and to select the time and the patient for surgical intervention.

3. In classifying the cases according to Holmes' suggestions,[17] we feel that repeated lumbar puncture and estimation of the degree of xanthochromia present afford help in this selection. It also allows for the selection of cases in which prolonged bed rest would be undesirable as a guide to early ambulation.

Ons wil graag ons dank uitspreek aan dr. Kotzé, Superintendent van die Karl Bremer-Hospitaal, vir verlof tot publikasie, en aan mej. Y. Stuart vir die tikwerk verbonde aan die manuskrip. Ook wil ons drs. H. L. de Villiers Hammann en F. van Niekerk van die neurochirurgiese afdelings van die Karl Bremer-Hospitaal en Groote Schuur-Hospitaal, bedank vir die angiografiese studies en die operatiewe behandelings.

VERWYSINGS

1. Walker, A. E. (1957): Surgery, **41**, 509.
2. Wassermann, H. P. en Brink, A. J. (1959): S. Afr. T. Geneesk., **33**, 189.
3. *Idem* (1959): S. Afr. T. Lab. Klin. (in die pers).
4. Martland, H. S. (1939): Amer. J. Surg., **43**, 10.
5. Fetter, W. J. (1943): Penn. Med. J., **49**, 949.
6. Meadows, S. P., red. Feiling, A. (1951): *Modern Trends in Neurology*. Londen: Butterworth.
7. Klein, R. en Attlee, J. H. (1948): J. Ment. Sci., **94**, 59.
8. Walton, J. N. (1956): *Subarachnoid Haemorrhage*. Edinburgh en Londen: E. & S. Livingstone.
9. Davson, H. (1956): *Physiology of the Ocular and Cerebrospinal Fluids*. Londen: J. & A. Churchill.
10. Haug, K. (1932): Arch. Psychiat. Nervenkr., **97**, 303, aangehaal deur Davson. *Loc. cit.*[9]
11. McMenemey, W. H. (1954): Proc. Roy. Soc. Med., **47**, 8.
12. Poppen, J. L. (1951): J. Neurosurg., **8**, 75.
13. Norlen, G. en Barnum, S. A. (1953): *Ibid.*, **10**, 634.
14. McKissock, W. en Walsh, L. (1956): Brit. Med. J., **2**, 559.
15. Braakman, R. (1957): Ned. T. Geneesk., **101**, 1313.
16. Ask-Upmark, E. en Ingvar, D. (1950): Acta med. scand., **138**, 15.
17. Holmes, J. M. (1958): Brit. Med. J., **1**, 788.
18. Walsh, L. S. (1956): Acta Radiol. (Stockh.), **46**, 321.
19. Kristiansen, K. (1956): *Ibid.*, **46**, 326.
20. Ballantine, H. T. en Klein, D. M. (1958): Circulation, **17**, 1112.
21. Parkinson, D. (1955): Neurosurg., **12**, 565.
22. Björkensten, G. af en Troupp, H. (1957): J. Neurosurg., **14**, 434.
23. Wechsler, I. S. en Gross, S. W. (1948): J. Amer. Med. Assoc., **136**, 517.

ARSENOBENZENE ENCEPHALOPATHY WITH RECOVERY

G. D. CAMPBELL, M.B., M.R.C.P. (EDIN.), *Physician, Durban*

Severe toxic reactions following the use of organic arsenicals used to be fairly common. Glaser,[1] in 1935, reported 1 death in every 2,700 patients treated with these preparations in a series of 170,000: half these deaths were due to involvement of the central nervous system. A particularly severe encephalopathy, 'fortunately rare',[2] is among the neurological reactions described.[1-7] Organic arsenicals are still widely used in non-specific conditions and, to emphasize the severity of

reaction that sometimes occurs after their use, the following case of 'arsenobenzene encephalopathy' (Brain[6]) due to intravenous Novarsenobillon (NAB) is recorded.

CASE REPORT

A 16-year-old schoolgirl was admitted to hospital on 20 November 1957. She had been quite well until 9 days before admission, when she had been given 'an injection for acne into the vein'. About 10 minutes after this she collapsed in the street, but recovered quickly, having been unconscious for less than half a minute. During the next week she felt a little unwell, but did not have any particular complaints. She was noted to have taken 'a lot of aspirins' during that time.

Two days before admission, and exactly 1 week after the first injection, she was given another intravenous injection, this time the injection being 'covered by cortisone'. She had no immediate ill-effects from this, and felt quite well until 48 hours after, when she woke in the morning feeling a little off colour, ate her breakfast with reluctance, and against the wishes of her father insisted on going to school. On her arrival there she looked so unwell that her teacher put her into the 'sick room', where she lay until she was sent home at 3 o'clock in the afternoon. On reaching home she complained of a headache, and said she was dizzy. She felt nauseated and her speech became confused. Shortly after this she suddenly lost consciousness and was seized by the most violent generalized convulsions. Each fit lasted for about 10 minutes, and they succeeded one another after intervals of about 20 minutes, until she was seen by her doctor, who gave her an intramuscular injection of 5 gr. of sodium luminal. She vomited with the first 3 fits, but not again after this. There was no previous history of epilepsy or of drug idiosyncrasy. Soon after admission it was found that the injections had in fact been NAB, the first of 0·15 mg. and the second of 0·30 mg.

When first seen the patient was unconscious and appeared to be gravely ill; she did not respond to painful stimuli otherwise than by having more seizures, which became more frequent as the examination proceeded. Her pupils were dilated in the extreme and did not respond to light. The retinae were normal. There was no evidence of neck retraction or other sign of meningeal irritation. The blood pressure was 125/65 mm. Hg, and the heart and abdomen were normal. There was no evidence of aspiration pneumonia. The skin was normal, no rash or purpura being seen.

Urine: Sugar 0·5%. Acetone +. Albumin +. Red cells—a few present.

Blood: Haemoglobin 13·2 g.%. Red cells 4·5 million per c.mm. Blood sedimentation rate (Wintrobe) 34 mm. in the 1st hour. White cells 16,000 per c.mm. (polymorphs 92%, lymphocytes 3%, mononuclears 5%). Red cells showed anisocytosis and polychromasia, and basophilic stippling was present. The platelets appeared to be increased, and there was a shift to the left in the myeloid series, with toxic changes.

Lumbar puncture: Pressure 140 mm. of water. Total cell-count less than 1 per c.mm. Globulin markedly increased. Sugar 87 mg.%. Protein 100 mg.%. Chlorides 730 mg.%.

A tentative diagnosis of arsenical encephalopathy was made, and treatment started on that supposition. In all the patient was unconscious for 5½ days, and *in extremis* for the first 2 days. The fits were well controlled at first by intramuscular paraldehyde, in doses of up to 4 ml. 4-hourly; although this was given by deep injection, it raised some large urticarial wheals on each occasion it was given. BAL (dimercaptol) therapy was started forthwith, in a dosage of one 2 ml. ampoule (100 mg.) every 6 hours, and this was kept up for 2 days. Intramuscular prednisolone was given, in an initial dosage of 20 mg., and 10 mg. 12-hourly after this for the first 3½ days. Soluble penicillin (500,000 units 12-hourly) was given for the whole period of unconsciousness and for a day after. An artificial airway was inserted soon after admission, and oxygen administered through it during an episode of cyanosis on the second day; this airway was kept in position, with frequent changes, until the cough reflex was recovered. An indwelling urethral catheter was inserted with the usual sterile precautions, and the bladder emptied at regular intervals, until she regained consciousness.

On the 2nd day, in spite of heavy paraldehyde dosage, the fits became more frequent and severe; the pulse rate rose to over 130 per minute and the respiration rate to 60 per minute. There was only slight pyrexia, to 99·0°F, and no signs of aspiration pneumonia were seen. It was thought that the rise in heart rate and respiration rate might be due to extreme brain-stem stimulation which was not being affected by the paraldehyde, and so morphia was cautiously substituted, in an initial trial dose of 1/6th gr. The response was most gratifying; the pulse rate dropped to 100 per minute and the respirations to 24 per minute, and the fits were well controlled. The dose of 1/6th g. of morphine was repeated 6-hourly for the next day and 8-hourly for the 4th day; it was discontinued on the 5th day.

On the 3rd day after admission the patient developed a widespread blotchy erythematous rash, confined mostly to the body but which was also seen on the arms and legs; this disappeared within 2 days, no purpura being seen. At this time she was showing definite signs of improvement in that smaller doses of morphine were needed to stop the fits. Intravenous therapy was cautiously started that day and 500 ml. of 5% dextrose in saline run in. This was followed by 1,500 ml. on the 4th day; and on the 5th she woke up after 500 ml. had been given, and intravenous fluids were discontinued soon after, because she was able to take sips of fluid by mouth almost at once. She had no other complaints other than of being tired and thirsty and of having a headache. Her recovery was complicated by a mild degree of nausea and vomiting, and she was discharged from hospital 10 days after admission without any evidence of neurological sequelae. Her urine was normal and has remained so. Six months later, she says that she has had lapses of memory, which have lasted up to a few hours on 2 occasions; there has been no headache or weakness, and she is progressing satisfactorily at a shorthand-typing school. Neurological examination is normal.

DISCUSSION

This syndrome seems to be clear cut: between 12 hours and 6 days after an intravenous injection of NAB, generally the 2nd or 3rd of a course,[5,2] the patient begins to feel ill. Headache and drowsiness come on, and there may be vomiting. Confusion and coma set in, and in three-quarters of the cases generalized convulsions occur.[4,5] Variable and diffuse signs are seen.[4] A scarlatiniform rash turning into a haemorrhagic purpura was noted by one observer.[8] The ultimate mortality has not been determined but one-quarter of the cases die within 24 hours of the onset of the illness.[4] All the 4 cases of Nelson *et al.*[3] died. Three of them were pregnant. In their article Nelson *et al.*[3] added that 'most cases' die, though recovery had been reported in 'several instances'. Recovery, when it occurs, is generally complete,[4] though residual disability has been noted.[5] 'Good results' are said to have been obtained by nursing the patients in an upright posture.[7] A raised cerebrospinal-fluid protein was considered unusual by one observer,[2] though we noted it in our case.

The actual cause of the syndrome is unknown; it has been seen after only one injection, but it occurs more commonly after the second or third.[2,3,5] It is not seen invariably in syphilitic patients,[4,5] and this would tend to rule out a Herxheimer reaction. Neither the dosage[3] nor the nature of the radical[2] appears to play any part in the genesis of the syndrome. It probably represents an antigen-antibody reaction, the brunt of which is borne by the nervous system—a 'neuro-allergy'; even myelitis has been reported.[5] A 'direct toxic action on the capillaries' has been suggested by the results of the post-mortem examinations.[3] The brain shows oedema and perivascular haemorrhages.[9] There is endothelial swelling of the vessels with ante-mortem thrombus formation and occasional vascular rupture.[2] Gross cerebral haemorrhage has also been reported.[5] The basal nuclei seem to be particularly affected.[3]

NAB is still used fairly widely in practice in non-specific conditions, notably stubborn mouth ulceration, in acne vulgaris, and to induce remissions in disseminated sclerosis. In view of this it is important to remember that its use sometimes causes severe illness and even death, and it should be reserved for those few cases of syphilis in which it is specifically indicated. When it is used, one should remember that it is rapidly oxidized by atmospheric oxygen to a toxic substance,[10] and it should be injected as soon as the ampoule is opened.

If a case of encephalopathy is encountered, early use should be made of BAL, and it would appear that treatment should include prednisone or an allied drug in full doses and an efficient anti-convulsant drug. With these drugs, and the withdrawal of as much cerebrospinal fluid as possible with the first lumbar puncture (if papilloedema is absent), mere fluid restriction would seem preferable to repeated lumbar punctures and the nursing of the patient in the upright position,[7] since this must be a difficult measure to introduce with patients as restless as these. Attention has recently been drawn to the fact that the Landry-Guillain-Barré syndrome may be a 'neuro-allergy', and impressive results are said to have been obtained by the use of large doses of cortisone.[11] Arsenobenzene encephalopathy, being almost certainly a neuro-allergy, should probably be treated with the same dosage; the doses used in this case (prednisolone, 20-30 mg. daily intramuscularly), though adequate, were probably smaller than those needed for a maximum margin of safety.

SUMMARY

To emphasize the need for restricting the indiscriminate use of Novarsenobillon (NAB), a case of 'arsenobenzene encephalopathy' is described in a 16-year schoolgirl who had been given 2 intravenous injections for acne vulgaris. The extreme severity of the illness, the clinical features, the laboratory findings and the method of treatment are described. The patient made a complete recovery. The condition is believed to be an allergic response. Its high mortality rate is discussed and a plea made that NAB should be used only in those cases of syphilis in which it is indicated. Attention is drawn to the fact that NAB is rapidly oxidized by atmospheric oxygen to a toxic substance, and should be injected as soon as the ampoule is opened.

I should like to acknowledge the very great kindness of the Matron of St. Augustine's Hospital, Durban, in allowing access to the case notes; I am particularly grateful to Drs. G. A. Drummond and J. E. Duncan Taylor for allowing me to quote the results of their laboratory investigations. I should also like to thank Dr. N. A. Rossiter for his guidance in the case, and Dr. J. Cosnett for his help with the preparation of the manuscript.

REFERENCES

1. Glaser, M. A., Immerman, C. P. and Immerman, S. W. (1935): Amer. J. Med. Sci., **189**, 64.
2. Halcrow, J. P. A. (1943): Brit. Med. J., **1**, 663.
3. Nelson, R. B., McGibbon, C. and Glyn-Hughes, F. (1943): *Ibid.*, **1**, 661.
4. Alpers, B. (1946): *Clinical Neurology*, 1st ed., p. 664. Philadelphia: Davis and Co.
5. Tice, F. (1952): *Practice of Medicine*, Vol. X, p. 579. Hagerstown, Md.: W. F. Prior Co.
6. Brain, W. R. (1952): *Diseases of the Central Nervous System*, p. 715. London: Oxford University Press.
7. Hunter, D., ed. (1956): *Price's Text-book of Medicine*, p. 232. London: Oxford University Press.
8. Winter, H. G. (1940): J. Roy. Army Med. Cps., **74**, 161.
9. Russell, D. S. (1937): J. Path. Bact., **45**, 357.
10. Gaddum, J. H. (1948): *Pharmacology*, 3rd ed., p. 406. London: Oxford University Press.
11. Graveson, G. S. (1957): Lancet, **1**, 340.

DEHYDRATION IN CHILDREN SUFFERING FROM PROTEIN MALNUTRITION (KWASHIORKOR)*

E. KAHN, M.D., M.R.C.P.E., D.C.H., *Baragwanath Hospital, Johannesburg*

The hallmark of protein malnutrition is an abnormally high water content of the body, and the title of this paper refers not to absolute values of body water content, but to clinical evidence of dehydration.

In this part of Africa severe diarrhoea is a common phenomenon in patients suffering from protein malnutrition (kwashiorkor). In up to 50% of cases it is caused by infection with shigella and salmonella organisms,[1] while in the remainder the cause is obscure. There is some evidence that the coexistence in the same patient of protein malnutrition and diarrhoea favours the development of dehydration, which is one of the most fatal complications of malnutrition.

There is considerable disagreement on the question whether diarrhoea influences the serum-electrolyte level of patients suffering from protein malnutrition. Hansen *et al.*[2] found hypopotassaemia in most of their cases, all of whom were reported to be suffering from diarrhoea. The sodium and chloride levels of their patients showed a wide scatter, with subnormal levels present in only a few cases. The potassium levels rose during treatment, while the sodium and chloride levels remained unchanged. Politzer and Wayburne[3] reported low serum-potassium levels in protein malnutrition, but these were encountered irrespective of the presence or absence of diarrhoea. Serum-sodium levels were below 125 mEq. per litre in about a quarter of their patients, also irrespective of the association with diarrhoea. Serum-sodium levels did not rise after dietetic treatment. On the other hand, Heller and Schnieden,[4] whose patients did not suffer from diarrhoea or suffered only mildly, encountered normal sodium and potassium levels in patients with protein malnutrition. Thompson[5] supported the findings of Heller and Schnieden. She found normal potassium levels whether the patients were suffering from diarrhoea or not. She was able to show low serum-potassium levels only in patients with clinical evidence of hypopotassaemia.

It is unlikely that these discrepant findings were caused by laboratory errors, because the electrolyte determinations were carried out with flame photometers, instruments known for their accuracy. Probably the inconsistencies are attributable to differences in the selection of patients for investigation. The different authors all divided their patients into those with and those without diarrhoea, but the criteria for the diagnosis of diarrhoea were not stated. It is known that in severe protein malnutrition intestinal absorption is

* Paper presented at Third Congress of South African Paediatric Association, Pretoria, October 1958.

defective and stools tend to be loose, particularly during treatment with skimmed milk. It is impossible to assess losses of water and electrolytes in the stools without studying each individual patient on a metabolic bed. Of the authors cited, this was done by Hansen *et al.*[2] only, and by them only on 7 (15%) of their cases. Furthermore, even the most accurate metabolic studies do not provide information regarding losses incurred in the past. It is therefore not surprising that contradictory results were obtained when serum-electrolyte levels were related to the severity of the diarrhoea.

In this paper I wish to show that there is some correlation between serum-electrolyte levels and dehydration and that it is almost entirely in patients with clinical evidence of dehydration that dangerously low levels are encountered.

MATERIAL AND METHODS

This investigation was based on the serum-sodium and serum-potassium levels of 75 unselected children admitted to Baragwanath Hospital with the diagnosis of severe protein malnutrition (kwashiorkor). Malnutrition was considered to be severe if there was evidence of nutritional oedema and/or acute nutritional dermatosis. I examined all patients on or shortly after admission to hospital and assessed their state of hydration before the serum-electrolyte levels were known. The assessment of the state of hydration was based on a single test, viz. picking up a fold of skin over the upper abdomen or the pectoral region and estimating its elasticity (these sites were chosen because elsewhere nutritional oedema was likely to interfere with skin elasticity). If the elasticity of the fold of skin was unimpaired the patient was judged not to be dehydrated. Any impairment of skin elasticity, however slight, was considered to be evidence of dehydration. In a few grossly wasted children this test could not be applied. The latter were 50% or more below their expected weight, there was extreme loss of subcutaneous fat deposits, and consequently the skin was loose, wrinkled and inelastic. All such patients with advanced wasting were classified as having a doubtful state of hydration.

Serum-electrolyte levels were determined by flame photometry on venous blood withdrawn from the internal jugular vein within a few hours of admission to hospital. In 4 patients the sodium levels were not determined and only the serum-potassium levels were known.

RESULTS

In this series 27 children were dehydrated, as indicated by impaired elasticity of the skin (19 of these children were oedematous). Serum-sodium levels below 124 mEq. per litre were encountered in 40% of these dehydrated children and serum-potassium levels below 3·5 mEq. in nearly 50% of them. There were no patients with hypertonic dehydration in this series.

In 40 children there was no clinical evidence of dehydration by the criteria applied in this investigation. All had serum-sodium levels between 124 and 140 mEq. per litre. On an average, serum-sodium levels in this group were 5 mEq. below those of normal controls. There were only 2 patients with serum-potassium levels below 3·5 mEq. in this group. The average serum-potassium level was ½-1 mEq. below that of normal controls.

In 8 children who were classified as having a doubtful state of hydration (mainly because they were marasmic) serum-sodium and serum-potassium levels were above 124 mEq./l. and 3·5 mEq./l. respectively.

DISCUSSION

This investigation has shown that severe lowering of serum sodium and potassium levels can be expected in nearly 50% of children suffering from protein malnutrition if they show clinical evidence of dehydration. Nutritional oedema was noted in 70% of the dehydrated children. The presence of nutritional oedema does not in any way influence the prognosis or treatment of dehydrated children.

It may appear arbitrary and unsound to assess the state of hydration of patients entirely by skin elasticity. However, I have found other criteria in the assessment of hydration, such as the appearance of the anterior fontanelle and the moistness of the tongue, to be unreliable.

For the reason that skin elasticity could not be used as a measure of hydration in marasmic children, no attempt was made in this investigation to subdivide the marasmic group into those with or without dehydration. However, this can be done by assessing the turgor of the retrobulbar tissues: in the absence of dehydration the eyes of marasmic children are usually somewhat prominent, and sunken eyes indicate severe dehydration. There is some evidence that dangerously low sodium and potassium levels are confined to malnourished marasmic children who show evidence of dehydration, and the fact that no severe lowering of serum sodium and potassium levels were encountered in the 8 marasmic children in this series indicates that none of them was suffering from dehydration.

In malnourished children with no evidence of dehydration dietetic treatment with cow's-milk mixtures usually suffices to restore the serum-electrolyte levels to normal, and intravenous fluid therapy is usually unnecessary. But malnourished patients with clinical evidence of dehydration, even if minimal in extent, rarely survive unless they receive intravenous fluid therapy. We usually employ a solution containing 35 mEq. of sodium and 27 mEq. of potassium per litre, and administer about 100 ml. of this solution per lb. of body weight during the first 24 hours. If there is no vomiting, we give graduated quantities of a cow's-milk mixture at the same time.

With the above regimen our mortality of severely malnourished children has been halved during the past 5 years. However, even now the mortality of children with dehydration is significantly higher than that of others. This suggests that there is still much to be learnt about the treatment of dehydration in children suffering from protein malnutrition.

REFERENCES

1. Kahn, E. (1957): S. Afr. Med. J., **31**, 47.
2. Hansen, J. D. L. and Jenkinson, V. (1956): S. Afr. J. Lab. Clin. Med., **2**, 206.
3. Politzer, W. M. and Wayburne, S. (1957): Brit. J. Nutr., **11**, 105.
4. Heller, H. and Schnieden, H. (1955), Lancet, **1**, 618.
5. Thompson, M. D. (1955): *Ibid*, **1**, 1181.

RICKETS IN THE CAPE PENINSULA*

C. P. DANCASTER, B.Sc., M.B., M.R.C.P. (EDIN.)

Senior Bursar 1958-59, *Department of Medicine, University of Cape Town, and S.A. Council for Scientific and Industrial Research Endocrine Group*

Fifty patients with active rickets were seen and investigated during the course of one year. There were 30 males and 20 females. Most patients were under the age of 2 years, but 4 were over this age, 2 being in their 5th year. All of these were cases of rickets due to lack of vitamin D. There was only 1 European case in this series, the remainder were Coloured or Bantu subjects.

Many of the patients were first seen in the summer months, when exposure to ultra-violet light should have been adequate. However, only 8 cases were exposed to more than 1 hour of sunlight daily, and many of the children saw no sunlight at all.

The calcium intake of these children was adequate (above 300 mg. a day) in all but 7 cases, and most were getting an intake of 700 mg. a day or more.

It would appear that breast-fed children are less prone to rickets than artificially-fed children in spite of the fact that the calcium content of cow's milk is more than double that of breast milk. Most of these cases (two-thirds) were breast-fed for less than 3 months, as compared with a control group of Coloured children of whom 80% were breast fed for a year.

The incidence of prematurity was 30% in this series as compared with 10% in a control group. All the children were underweight when active rickets was diagnosed.

Diarrhoea was present in all these children, and 50% had chest infections.

There was evidence of rickets in more than one sibling in 9 of the 16 families investigated. This might be due to the fact that all members of the family were brought up in the same way, and had little exposure to sunlight. It might possibly also indicate an inherited susceptibility.

Biochemical studies included serum calcium, inorganic phosphorus, alkaline phosphatase, protein and citrate levels. Changes in these parameters were correlated with radiological changes in an attempt to see which was the most satisfactory criterion for assessing activity and healing. Although serum inorganic phosphorus and alkaline phosphatase are two reliable indices of activity, there were occasional cases in whom both these were normal in active rickets. Neither serum calcium nor citrate levels are good indices of activity or healing, since both low and normal values were obtained in active and healing rickets. The calcium-phosphorus quotient was often below 30 in the presence of radiological healing.

Radiological changes are therefore probably the most reliable index of activity and healing. However, these changes only appear late in rickets. Craniotabes over the age of 3 months is probably the earliest clinical indication, and many patients at this time have normal radiological appearances.

Mean haemoglobin levels were lower than in a control group, and some cases were grossly anaemic. Total serum protein and the individual globulin fractions were all normal (in view of the susceptibility of the patients to infection, the possibility that their gamma globulins might be deficient was considered). Raised urinary amino-acid levels were found in 4 out of 5 cases.

These patients were treated with calciferol and dihydrotachysterol (AT10). Whether AT10 would satisfactorily heal rickets was unknown, and its trial was of interest particularly in view of its more parathyroid-like effect (according to Albright).

In 11 of 15 cases we obtained satisfactory radiological healing with AT10. All cases, however, responded to calciferol irrespective of the route of administration, and included those not responding to AT10. In a metabolic balance the effects of AT10 and calciferol were compared. Both were found to promote calcium absorption from the gut in approximately the same degree.

I should like to thank Dr. W. P. U. Jackson for advice and encouragement; also Profs. F. Forman and F. Ford and Drs. J. Hansen and P. Smythe. The work here reported is part of the programme of the Endocrine Research Group supported in the Department of Medicine, University of Cape Town, by the South African Council for Scientific and Industrial Research.

*Abstract of paper presented at Research Forum, University of Cape Town, 7 April 1959.

42ND MEDICAL CONGRESS (M.A.S.A.), EAST LONDON, 27 SEPTEMBER—3 OCTOBER 1959
42STE MEDIESE KONGRES (M.V.S.A.), OOS-LONDEN, 27 SEPTEMBER—3 OKTOBER 1959

Certain alterations and additions have been made to the programme of Congress as published in the *Third Circular*.

2. *Distinguished visitors to Congress.* The Organizing Committee has announced that Professor Antoine, of Vienna, a gynaecologist and obstetrician of international repute, will attend Congress and take part in the proceedings. Professor Antoine is the guest of the South African Society of Obstetricians and Gynaecologists (M.A.S.A.), and his visit to the Union has been made possible by Messrs. Johnson and Johnson (S.A.) Ltd.

4. *Plenary session, Thursday* 1 *October.* Symposium on 'Tuberculosis—yesterday, today and tomorrow'. Alterations have been made in the speakers in this symposium since Dr. Osburn is now unable to attend Congress. Dr. B. A. Dormer will now discuss both 'Basic principles in the epidemiology and control of tuberculosis' and 'The growth of tuberculosis services in South Africa'. Dr. Basil Sampson will now be the second speaker in the symposium, his subject being 'Research in tuberculosis in South Africa'.

6. *Office Bearers in Scientific Sections.* The office bearers for the section of neurology, psychiatry and neurosurgery (Section 6) will now be: Chairman, Prof. J. F. P. Erasmus; Vice-chairman, Dr. Alice Cox; and Secretary, Dr. G. B. Lord.

7. *National Group Business Meetings.* The meetings scheduled to take place on Monday 28 and Wednesday 30 September will now begin at 4.30 p.m. and *not* 4 p.m. Under 'Special Arrangements' (Item 4) will members please note that the scheduled time for the inaugural meeting of the Society for Endocrinology, Metabolism and Diabetes, South Africa, has been changed from

Sekere veranderings en byvoegings is gemaak tot die program van die Kongres wat gepubliseer is in die *Derde Omsendbrief*.

2. *Vooraanstaande besoekers aan die Kongres.* Die Organiserende Komitee deel mee dat professor Antoine van Weenen, Oostenryk, 'n ginekoloog en verloskundige met internasionale bekendheid, die Kongres sal bywoon en deelneem aan die verrigtinge. Professor Antoine is die gas van die Suid-Afrikaanse Vereniging van Verloskundiges en Ginekoloë (M.V.S.A.) en sy besoek aan die Unie is moontlik gemaak deur die here Johnson en Johnson (S.A.) Ltd.

4. *Voltallige vergaderings, Donderdag* 1 *Oktober.* Simposium oor Tuberkulose—gister, vandag en môre'. Veranderinge is gemaak ten opsigte van die sprekers in hierdie simposium aangesien dr. Osburn nou nie die Kongres kan bywoon nie. Dr. B. A. Dormer sal nou ‚Basic principles in the epidemiology and control of tuberculosis' sowel as ‚The growth of tuberculosis services in South Africa', bespreek. Dr. Basil Sampson sal dan die tweede spreker in die simposium wees en sy onderwerp is ‚Research in tuberculosis in South Africa'.

6. *Ampsdraers van die Wetenskaplike Afdelings.* Die ampsdraers van die afdeling neurologie, psigiatrie en neuro-chirurgie (Afdeling 6) sal nou wees: Voorsitter, prof. J. F. P. Erasmus; Vise-voorsitter, dr. Alice Cox; en Sekretaris, dr. G. B. Lord.

7. *Uniale Groepe: Sakevergaderings.* Die vergaderings wat bepaal is vir Maandag 28 en Woensdag 30 September, sal nou om 4.30 nm. begin en nie om 4 nm. nie. Sal lede asseblief daarop let dat nr. 4 van die Spesiale Reëlings gewysig is en dat die inwydingsvergadering van die Vereniging vir Endokrinologie, Metabolisme en Diabetes, Suid-Afrika, nie meer op Dinsdag 29 September nie maar wel op Maandag 28 September om 4.30 nm.

Tuesday 29 to Monday 28 September at 4.30 p.m. to avoid clashing with the meeting of the Southern African Cardiac Society.

12. *Social Programme.* The Congress Banquet will be held in the New Banquet Hall of the Carlton Hotel on Tuesday 29 September at 7.30 for 8 p.m. This function is for medical graduates (delegates) only and the number of tickets available may have to be limited. The tickets will cost 2 guineas per person.

The Congress Ball will be held in the City Hall, East London, on Wednesday 30 September at 8.30 p.m. The tickets will cost 3 guineas (double) and the number available may also have to be limited at this function.

sal plaasvind om te voorkom dat die vergadering bots met die vergadering van die Suidelike Afrikaanse Hartvereniging.

12. *Program van Geselligheid.* Die Kongresbanket sal gehou word in die Nuwe Banketsaal van die Hotel Carlton op Dinsdag 29 September om 7.30 vir 8 nm. Hierdie funksie is slegs vir mediese gegradueerdes (afgevaardigdes) en die aantal beskikbare kaartjies sal beperk moet word. Die kaartjies sal 2 ghienies per persoon kos.

Die Kongresbal sal in die Stadsaal, Oos-Londen gehou word op 30 September om 8.30 nm. Dubbelkaartjies sal 3 ghienies elk kos en die aantal beskikbare kaartjies sal ook beperk moet word vir hierdie geleentheid.

PROGRAM VAN CHIRURGIESE OPKNAPPINGSKURSUS, BLOEMFONTEIN, JUNIE 1959
PROGRAMME OF SURGICAL REFRESHER COURSE, BLOEMFONTEIN, JUNE 1959

Die Nagraadse Skoolbeplanningskomitee het weereens 'n opknappingskursus georganiseer van Donderdag 25 tot Saterdag 27 Junie. Die lesings sal in die Doktersteekamer van die Nasionale Hospitaal, Bloemfontein, gehou word. Almal wat belangstel in die kursus word versoek om in verbinding te tree met die Ere-Sekretaris, Nagraadse Skoolbeplanningskomitee, Posbus 834, Bloemfontein, vóór Saterdag 20 Junie.

The Postgraduate School Steering Committee has organized another refresher course from Thursday 25 to Saturday 27 June. The lectures will be held in the Doctors' Tea Room, National Hospital, Bloemfontein. Anyone interested in attending the course should inform the Hon. Secretary, Postgraduate School Steering Committee, P.O. Box 834, Bloemfontein, before 20 June.

DONDERDAG 25 JUNIE/JUNE 25 THURSDAY

nm. 1.45—2 p.m. Inskrywings/Registration.
nm. 2.15—2.45 p.m. 'The treatment of burns'. Dr. R. W. Busschau.
nm. 2.45—3.15 p.m. Teepouse/Tea interval.
nm. 3.15—4.00 p.m. 'Swellings of the thyroid gland'. Dr. A. R. Epstein.
nm. 4.00—4.10 p.m. Pouse/Interval.
nm. 4.10—5.00 p.m. Filmvertoning/Film show.

Aandete/Dinner

nm. 8.10 p.m. Symposium 'Akute buik'. Drs. v. W. Eybers, P. E. Dreyer, J. P. Theron, J. D. Meyer.

VRYDAG 26 JUNIE/JUNE 26 FRIDAY

vm. 8.30— 9.15 a.m. 'Chirurgiese skok'. Dr. A. G. M. Morrison.
vm. 9.15— 9.30 a.m. Pouse/Interval.
vm. 9.30—10.15 a.m. Filmvertoning/Film show.
vm. 10.15—10.45 a.m. Teepouse/Tea interval.
vm. 10.45—11.45 a.m. Saal-besoeke/Ward round. Dr. C. Albertyn.
vm. 11.45—12.00 p.m. Pouse/Interval.
nm. 12.00— 1.00 p.m. Saal-besoeke/Ward round. Dr. L. H. Muller.

Middagete/Luncheon

nm. 2.15—2.45 p.m. 'Karsinoom van die mamma'. Dr. M. H. Wessels.
nm. 2.45—3.15 p.m. Teepouse/Tea interval.
nm. 3.15—4.00 p.m. 'Hoofbeserings in padongelukke'. Dr. J. S. van der Poel.
nm. 4.00—4.10 p.m. Pouse/Interval.
nm. 4.10—5.00 p.m. 'Trauma van die uretra'. Dr. A. J. Vorster.

Dinee by die Bloemfontein Klub/Dinner at the Bloemfontein Club

SATERDAG 27 JUNIE/JUNE 27 SATURDAY

vm. 8.00—10.00 a.m. Teater-besoek of eie keuse/Theatre visit or own choice.
vm. 9.30—10.15 a.m. 'The modern indication for tracheostomy. Dr. W. Grundill.
vm. 10.15—10.45 a.m. Teepouse/Tea interval.
vm. 10.45—11.45 a.m. 'Herstel van breuk'. Dr. J. S. Visser.

PASSING EVENTS : IN DIE VERBYGAAN

Research Forum, University of Cape Town. A meeting of Research Forum will be held on Tuesday 16 June at 12 noon in the large A-floor lecture theatre, Groote Schuur Hospital, Observatory, Cape. Dr. W. Silber (Department of Surgery) will speak on 'The closing mechanism of the lower end of the oesophagus and oesophageal pressure studies in relation to diseases of this region'. All who are interested are invited to attend this meeting.

* * *

Dr. Werner Weinberg, of Johannesburg, National Secretary of the International Fertility Association in South Africa, was appointed Vice-president, *in absentia*, of the Sectional Meeting 'C' on female sterility by the Programme Committee of the Third World Congress on Fertility and Sterility held in Amsterdam, the Netherlands, on 7-13 June 1959.

* * *

Prof. G. A. Elliott, President of the College of Physicians, Surgeons and Gynaecologists of South Africa, who has recently returned from an extended overseas visit, will address a meeting of members of the Cape Western Branch (M.A.S.A.) on 'A drive down Africa'. This meeting will be held on Friday 19 June at 8.15 p.m. in the New Science Lecture Theatre, University of Cape Town, Rondebosch (near the Jameson Hall and *not* in the physiology lecture theatre, Medical School). Professor Elliott will illustrate his lecture with colour slides. Members of the Branch are cordially invited to bring their wives, or visitors, to the meeting. Will members of the Branch please note that this meeting is in place of the usual monthly Branch meeting.

Prof. G. A. Elliott, President van die Kollege van Interniste, Chirurge en Ginekoloë van Suid-Afrika, wat onlangs van 'n uitgebreide oorsese reis teruggekeer het, sal 'n vergadering van lede van die Tak Wes-Kaapland (M.V.S.A.) toespreek oor ,'n Rit deur Afrika'. Hierdie vergadering sal op Vrydag 19 Junie om 8.15 nm. in die Nuwe Wetenskap-lesingsaal, Universiteit van Kaapstad, Rondebosch (naby die Jameson-Saal en *nie* in die Fisiologie-lesingsaal van die Mediese Skool nie) gehou word. Professor Elliott sal sy toespraak met kleurskyfies illustreer. Lede van die Tak word hartlik uitgenooi om hul vrouens, of gaste, na die vergadering te bring. Sal lede asseblief daarop let dat hierdie vergadering gehou sal word in die plek van die gewone maandelikse vergadering van die Tak.

* * *

Pretoria School for Cerebral Palsy. On Wednesday 24 June the Foundation Stones for this, the first school specially built for this handicap in South Africa, will be laid. The school will accommodate 120 children—one-third in residence. The buildings will cost £120,000 of which two-thirds has been contributed by the Department of Education, Arts and Science, and the remainder will be raised by the Pretoria and Northern Transvaal Cripples' Care Association, who still require £10,000 to complete the project. Great thought and attention has been given to the design

of the buildings, the architect, Mr. Eric Todd, having spent some time overseas to study the problem. The National Building Research Institute placed at the disposal of the Board of Management of the School all the latest information available and the results of its own researches into the construction of such schools. The Pretoria school, when completed, will make a very important contribution to the medical, educational, and rehabilitative services available in this country. The School, through its Board of Management, extends an invitation to all members of the medical profession and their wives or husbands to attend this function of the laying of the Foundation Stones.

Skool vir Serebrale Verlamdes, Pretoria. Op 24 Junie sal die hoeksteen gelê word van hierdie skool wat die eerste in sy soort is om vir hierdie gebrek in Suid-Afrika gebou te word. Die skool sal 120 kinders kan toelaat—een derde daarvan as inwonende leerlinge. Die gebou sal £120,000 kos waarvan twee derdes bygedra is deur die Departement van Onderwys, Kuns en Wetenskap; die res moet gevind word deur die Pretoria en Noord-Transvaalse Kreupelsorgvereniging. Hierdie liggaam kom nog £10,000 kort om die projek te voltooi. Die beplanning van die gebou het veel aandag en oorleg vereis. Die argitek, mnr. Eric Todd, het 'n geruime tyd lank die probleem oorsee bestudeer. Die Nasionale Instituut vir Bounavorsing het al die jongste informasie wat verkrygbaar is en die resultate van hul eie ondersoek na die konstruksie van sulke skole, beskikbaar gestel vir die Beheerraad van die Skool. Wanneer dit voltooi is, sal hierdie skool in Pretoria 'n baie belangrike bydrae kan maak tot die mediese, opvoedkundige en rehabilitasiedienste wat in hierdie land beskikbaar is. Deur sy Beheerraad nooi hierdie Skool alle lede van die mediese professie, saam met hul eggenote en eggenotes om die funksie van die hoeksteenlegging by te woon.

* * *

Association of Physicians of South Africa (M.A.S.A.), Cape Town Sub-group. At the Annual General Meeting of this Sub-group, held on 19 May, it was decided that instead of the usual evening lectures, which have been poorly attended, a medical congress, lasting a single day, should be held from time to time. The first meeting of this type will be held on Friday 17 July from 9.30 a.m. to 4.15 p.m. It is proposed that 20—30 minutes be allowed for each paper and discussion, and that the papers should cover a wide variety of interests. All members of the Sub-group are urged to attend this congress so that it will be a success. Those who wish to present papers are asked to notify the Hon. Secretary, Dr. Hendrik Muller, 812 Medical Centre, Heerengracht, Cape Town, by 21 June. Medical registrars are invited to attend and also to present papers. The meeting will be held in the Pathology Department, University of Cape Town.

Vereniging van Interniste van Suid-Afrika (M.V.S.A.), Kaapstadse Sub-Groep. Op die Algemene Jaarlikse Vergadering van die Sub-groep wat op 19 Mei gehou is, is dit besluit om in plaas van die gewone aand-lesings wat baie swak bygewoon word, van tyd tot tyd 'n mediese kongres te hou wat slegs een dag sal duur. Die eerste vergadering van hierdie aard sal gehou word op Vrydag 17 Julie van 9.30 vm. tot 4.15 nm. Daar word voorgestel dat 20—30 minute toegestaan word vir elke verhandeling en bespreking, en dat die verhandelings 'n groot gebied van belangstelling moet dek. Alle lede van die Sub-groep word dringend versoek om 'n poging aan te wend om hierdie kongres by te woon om sodoende die sukses daarvan te verseker. Diegene wat wens om 'n lesing te gee, word versoek om die Ere-sekretaris, Dr. Hendrik Muller, Mediese Sentrum 812, Heerengracht, Kaapstad, in kennis te stel teen 21 Junie. Mediese registrateurs word uitgenooi om die kongres by te woon asook om bydraes te lewer. Die vergadering sal in die Departement Patologie, Universiteit van Kaapstad, gehou word.

* * *

South African Road Safety Council. As a step towards the formation of the new Road Safety Council, the local road safety bodies in the Transvaal, Eastern Cape, Western Cape, Orange Free State and Natal have elected 17 members and alternates to represent them on that Council. These elections took place on the occasion of the recent annual meetings of the respective Provincial Road Safety Committees. The South African Road Safety Council, as announced by the Minister of Transport last January, will comprise representatives of governmental and other interested official bodies as well as non-official members who will include the representatives of local road safety associations and committees. The new Road Safety Council will be constituted as a body corporate by a Bill to be introduced into Parliament by the Minister of Transport. The first meeting of the new Road Safety Council will probably be held a month or two after the conclusion of the present parliamentary session. The Committee of Inquiry into Road Safety was appointed by the Minister of Transport in July 1955, and its report was published in April 1958. It recommended, among many other things, that the National Road Safety Organization, which at present operates as a non-profit body, subsidized by the Government and the Provinces, be replaced by a new 'streamlined' body to be called the South African Road Safety Council. In the meantime the National Road Safety Organization has been carrying on the everyday work of road safety so that there will be no break in continuity.

Suid-Afrikaanse Padveiligheidsraad. In afwagting van die stigting van die nuwe Padveiligheidsraad het die plaaslike padveiligheidsliggame in Transvaal, Oos-Kaapland, Wes-Kaapland, die Vrystaat en Natal, 17 lede en plaasvervangers gekies om hulle op die Raad te verteenwoordig. Die verkiesings het plaasgevind gedurende die onlangse jaarvergaderings van die Provinsiale Padveiligheidskomitees. Die Suid-Afrikaanse Padveiligheidsraad, soos die Minister van Vervoer verlede Januarie aangekondig het, sal saamgestel word uit verteenwoordigers van Regerings- en ander belanghebbende amptelike liggame, plus die nie-amptelike lede soos die verteenwoordigers van plaaslike padveiligheidsverenigings en -komitees. Die nuwe Padveiligheidsraad sal 'n korporasie vorm kragtens 'n wetsontwerp wat in die Parlement ingedien sal word deur die Minister van Vervoer. Die eerste vergadering van die nuwe Padveiligheidsraad sal waarskynlik 'n paar maande na afloop van die huidige sitting van die Parlement gehou word. Die Komitee van Ondersoek na Padveiligheid is in Julie 1955 deur die Minister van Vervoer aangestel, en die verslag is in April 1958 gepubliseer. Die Komitee het o.a. voorgestel dat die Nasionale Padveiligheidsorganisasie, wat tans optree as 'n nie-winsgewende liggaam en deur die Regering en die Provinsies gesubsidieer word, vervang word deur 'n nuwe ‚stroombelynde' liggaam wat bekend sal staan as die Suid-Afrikaanse Padveiligheidsraad. Intussen gaan die Nasionale Padveiligheidsorganisasie voort met sy normale werksaamhede van padveiligheid om kontinuïteit te handhaaf.

NEW PREPARATIONS AND APPLIANCES : NUWE PREPARATE EN TOESTELLE

PHENERGAN

Maybaker (S.A.) (Pty.) Ltd. announce the introduction of a 1-c.c. ampoule containing 2·5% solution of Phenergan brand promethazine hydrochloride, which will be found useful in anaesthetic premedication and for other indications where a smaller dose of the drug is required.

The product will be supplied in boxes of 10×1-c.c. ampoules.

ALBAMYCIN-T

Upjohn announce the availability of Albamycin-T flavoured granules and supply the following information:

Composition. When 50 c.c. of water is added to fill the bottle and shaken until the suspension is uniform, each c.c. will contain novobiocin (as albamycin calcium) 62·5 mg., plus tetracycline base equivalent to tetracycline HCl 62·5 mg.

Action and uses. Albamycin-T is indicated in the treatment of mixed infections and infections susceptible to therapy with albamycin, tetracycline or a combination of both. It offers a wider range of therapeutic activity than either antibiotic alone; and adds a new dimension to broad spectrum antibiotic therapy, viz. bactericidal depth. Clinical data reveals the advantages of Albamycin-T, which may be summarized under 4 headings:

1. It intercepts the development of resistant organisms and super-infection.
2. It amplifies the action of tetracycline against those organisms that cause the majority of bacterial infections.
3. It eliminates already resistant organisms.

4. It supplies high blood levels necessary for rapid therapeutic effect.

Albamycin-T flavoured granules are ideally suited to paediatric use from the standpoint of stability, dosage flexibility, palatability and efficacy. It brings to bear against infection two of the most effective antibiotics for the two most frequently involved groups of bacteria—staphyloccus and streptococcus.

Dosage. The daily dose should be calculated at 0·6 c.c. to 1·0 c.c. of suspension per kg. of body weight, in 2 divided doses:

4-10 kg.	..	½ to 1 teaspoonful daily.
10-20 kg.	..	1 to 2 teaspoonfuls daily.
20-60 kg.	..	2 to 6 teaspoonfuls daily.

The flavoured granules are now available in addition to Albamycin-T tablets.

Further information and clinical references are available from Tuco (Pty.) Ltd., P.O. Box 7779, Johannesburg.

FUNGIZONE

Squibb Laboratories (Pty.) Ltd. announce the introduction of Fungizone and supply the following information:

The establishment of emergency depots throughout the world to make available in emergencies a new antibiotic with demonstrated clinical efficacy in the therapy of a number of both superficial and systemic mycotic infections, has been announced by the Squibb International Division of Olin Mathieson Chemical Corporation. This antibiotic is called Fungizone (generic term: amphotericin B).

Investigators report that this antibiotic has proved effective in the following systemic fungus diseases, several of which have, until the discovery of this preparation, been fatal: cryptococcosis (torulosis); coccidioidomycosis; histoplasmosis; South American and North American blastomycosis; aspergillosis; South American leishmaniasis; and disseminated moniliasis. Several physicians, it was noted, have also obtained beneficial results in using Fungizone for the treatment of cryptococcal meningitis.

Fungizone or amphotericin B is derived from a previously undescribed species of streptomyces. This species of streptomyces was isolated by the scientists of The Squibb Institute for Medical Research in New Brunswick, USA, from soil samples obtained from the banks of the Orinoco River in Venezuela.

According to clinicians using Fungizone, improvement ranging from fair to marked was noted in a significant number of patients. In some instances results were negative or therapy had to be discontinued because of toxic effects. It was reported that chills, fever, nausea, and headaches were frequently observed side-effects, although these reactions were in some cases controlled or reduced by use of antipyretics or antihistaminics, by suspension of therapy, or reduction of dosage.

Fungizone is generally administered by intravenous infusion; according to investigators other parenteral routes may also be used. Fungizone is available as a sterile powder, packed in vials containing 50 mg. of amphotericin B activity, for reconstitution in dextrose solution. According to the manufacturer, saline solution should not be used.

In the Union of South Africa, emergency supplies are being stocked by all branches of Protea Pharmaceuticals Ltd.

BOOK REVIEWS : BOEKBESPREKINGS

PSYCHIATRIC SYMPOSIUM

Topics in Psychiatry. Edited by T. Ferguson Rodger, R. M. Mowbray and J. R. Roy. Pp. x+265. Illustrations. 20s. net. London: Cassell and Company Ltd. 1958.

This excellent book is no more than it claims to be, viz. a symposium. It is, in fact, an edited account of the proceedings of a specialist conference in psychiatry, held in Glasgow in October 1957 under the auspices of the postgraduate Medical Education Committee of the University of Glasgow and the Royal Faculty of Physicians and Surgeons of Glasgow.

This symposium tells us nothing that is new in the field of psychiatric knowledge. What it does do, however, is to present in a concise form a series of excellent surveys covering various fields in psychiatry. This book has brought together in an eminently readable and digestible manner much of the latest views, experimental evidence and clinical experience in the world of psychiatry.

There are 5 main sections covering schizophrenia, psychosomatic medicine, the tranquillizing drugs, mental deficiency, biochemistry and genetics. Further, it contains a comprehensive bibliography. It will prove a particularly useful addition to the bookshelves of postgraduate students in psychiatry.

S.W.G.C.

SURGERY

Text-book of British Surgery. Volume 3. Edited by Sir Henry Souttar, C.B.E., D.M. (Oxon.), F.R.C.S. and J. C. Goligher, Ch.M. (Edin.), F.R.C.S. (Edin. and Eng.). Pp. viii+619. 207 illustrations. 105s. net. London: William Heinemann Medical Books Ltd. 1958.

Genito-urinary conditions are covered systematically and this section is distinguished by the addition of line drawings as well as X-ray illustrations, which add materially to the merit of the subject matter.

Peripheral vascular disease is covered by Charles Robb and, as one would expect, this section is both full and authoritative and can be read with benefit by every general surgeon. The detailed description of non-operative treatment is a valuable contribution. Whilst the substance of this section is of high standard, the literary level is considerably lower; the phrasing is poor, and the art of punctuation seems unknown.

Plastic surgery is given adequate space (almost 100 pages) and reconstruction of various organs is well described, as well as basic problems of skin grafting and cleft palate. The details in this section will be appreciated by readers who turn to the book for guidance in the plastic problems which confront the general surgeon.

The section entitled Surgery in the Tropics is made up of an account of a fair variety of parasitic diseases, of which some are likely to be of interest to South African readers. The portions devoted to hydatid disease, bilharzia, and amoebiasis, are of local interest, but the actual surgical treatment of lesions due to these diseases is not by any means detailed and is written more for examination purposes than for practical guidance in handling cases. Much the same comment could be applied to the sections on actinomycosis and on venereal and allied diseases.

The discussion of radiology as an aid to clinical surgery covers a fairly wide field from emergency traumatic work, through sialography, alimentary tract, biliary tract, urography and bony conditions, to femoral arteriography. One might have expected some contribution on aortography. The section on radiotherapy in malignant disease is useful in that it presents some of the basic details regarding radiosensitivity and also the *modus operandi* of radiotherapy.

The endocrine section covers conditions of the adrenal and parathyroid, while the closing chapters on blood transfusion, fluids and electrolytes, shock and trauma, and chemotherapy, are absolutely essential in the present-day surgical field.

One's general impression of this book is that it will be of considerable value to the postgraduate student seeking a higher qualification.

P.C.W.M.

MEDICINE

The Principles and Practice of Medicine. A text-book for students and doctors. 4th edition. By Sir Stanley Davidson, B.A. (Cantab.), M.D., F.R.C.P. (Ed.), F.R.C.P. (Lond.), M.D. (Oslo) and the staff of the Department of Medicine, University of Edinburgh, and associated clinical units. Pp. xi+1067. 73 figures. 7 colour plates. 35s. net + 2s. 9d. postage abroad. Edinburgh and London: E. & S. Livingstone Ltd. 1958.

Within a short period of 6 years, 4 editions and 3 reprints of this text-book have been published. This phenomenal demand alone indicates that the style, composition and presentation of material have met with general approval, and is a triumph for Sir Stanley Davidson (who is retiring in March next year) and the staff of the Edinburgh Department of Medicine.

The book is authoritative, concise and dogmatic. The contents

are remarkably up to date. The commoner diseases are dealt with fully, while the rarer disorders and syndromes are merely summarized or omitted altogether.

In this edition new material has been included in almost every section, and the sections devoted to psychological medicine and electrocardiography have been expanded. Yet, through careful pruning and the omission of redundant and out-of-date material, the edition is actually 12 pages shorter than its predecessor.

This book meets the demands of the undergraduate student very adequately. It can be recommended to the general practitioner for reference and even the postgraduate in training should derive benefit from reading it.

P.W.B.

NEUROPSYCHIATRY

Foundations of Neuropsychiatry. 6th revised and enlarged edition. By Stanley Cobb, A.B., M.D., Sc.D. Pp. ix+313. 16 figures. 40s. net. London: Baillière, Tindall and Cox Ltd. 1958.

Professor Cobb has long been prominent in the search for concepts to bridge the dichotomy existing between mind and body. Primarily a neurologist, he approaches the problem from the aspects of the central nervous system. This neurological approach was at first epitomized in Griesinger's dictum, 'Mental diseases are brain diseases'. The intervening century has shown that this simplified somatic viewpoint is completely inadequate for understanding abnormal behaviour. New concepts had to be found to close the gap between somatic aspects such as brain, and non-material psychological concepts in the field of psyche.

This book presents the interesting and important advances in the field of neurophysiology. It is written to teach medical students about living function at the same time as they are receiving instruction in neuropathology. Reflex action is described in the light of current ideas of 'feed-back' derived from communication engineering. As sensory perceptions are presented the complicated central elaboration which is effected in the living subject is emphasized. When the physiology of pain is described, the next chapter sets out the varying psychological reactions to pain. An anatomical site for the emotional functions has recently been propounded in the concept of the 'visceral brain' in the temporal lobe; the reticular substance of the midbrain (far from being mere supporting tissue) has become recognized as functioning to activate the thalamus and cerebral cortex.

Teaching the student about such advances enables him to grasp more clearly the monistic attitude towards medicine which contemporary medical education strives to inculcate. Diseases have multiple and not specific causes, because disease (as well as health) is a reaction of the human organism to a complex external and internal environment. Mind need no longer be thought of as distinct from body. On the contrary. Mind is integration, Cobb teaches. The normal function of mind depends on the homeostatic mechanisms of the whole body. For the student this book should be essential reading in neurophysiology.

H.W.

ALDOSTERONE

An International Symposium on Aldosterone. By Alex F. Muller, M.D. and Cecilia M. O'Connor, B.Sc. Pp. 232. 84 illustrations. 40s. net. London: J. & A. Churchill Ltd. 1958.

Although it is only a few years since the isolation of crystalline aldosterone, a great deal of fundamental work has been carried out, and a degree of understanding of the role of this hormone in relation to electrolyte and water balance has been achieved.

This symposium is therefore of absorbing interest. The participants include experts from Belgium, Canada, England, France, Germany, Holland, Sweden, Switzerland and the USA. There is much of importance for both the biochemist and the clinician.

The technical difficulties inherent in the determination of urinary aldosterone are extensively dealt with. Neher presents data on the hormone content of tumours and adrenal fragments. It is clear that apart from cortisol and aldosterone, corticosterone needs to be taken into account. It is probable that other, as yet unknown, adrenal hormones will come to light.

Gross and Lichtlen emphasize the differences between aldosterone and cortexone, while the elegant work of Giroud *et al.* sheds considerable light on the biosynthesis of aldosterone, and the Middlesex group discuss the metabolism of 16^3H aldosterone in man. The inconsistency of the diurnal variation in aldosterone excretion is explained by Muller *et al.* by the failure to consider the effects of the assumption of the erect posture and muscular activity. The mechanisms controlling aldosterone secretion are still uncertain. Apart from the minor influence of the pituitary gland, and the enhancing effect of sodium restriction and potassium loading, Bartter *et al.* present experimental evidence which, they hold, supports the hypothesis that an alteration in some facet of the intravascular volume is the major stimulus to aldosterone secretion. Hypothetical volume receptors in the hypothalamus have been postulated and perhaps the hypothalamic substance reported by Farrel is the important effector agent in increasing aldosterone secretion.

These are unanswerable problems. So is the enigma of primary aldosteronism, with its state of mineral and corticoid excess and yet lack of oedema. In secondary aldosteronism, however, oedema is a marked feature. As yet there is no explanation for the difference. The restricted salt intake of many oedematous patients may be a factor in the higher urinary aldosterone outputs.

Ayres *et al.* review the clinical spectrum of primary aldosteronism, and Stanbury *et al.* discuss the well recognized relationship between potassium deficiency and renal function and structure. The chapter by Mach on idiopathic oedema with hyperaldosteronuria is also of interest to the clinician.

The book is well produced and the charts are informative. This stimulating volume is highly recommended to all who are interested in aldosterone and its functions in health and disease.

L.E.

CARDIOVASCULAR DISEASE

Cardiovascular Diseases. 3rd edition, revised and enlarged. By David Scherf, M.D., F.A.C.P. and Linn J. Boyd, M.D., F.A.C.P. Pp. xvi+829. 119 figures. $17.75. New York and London: Grune & Stratton, Inc. 1958.

It is difficult to assign this book its proper place. Although the field of cardiology is well covered, one would be unable to advise that it be used as a text-book, either for undergraduate or postgraduate students. The physiological approach is too much neglected for the former, and the latter would surely want some instruction on the methods and interpretation of specialized techniques.

The poor description and presentation of electrocardiograms is the most serious deficiency, and cannot be compensated for by the prospect of a separate volume on clinical electrocardiography

Nevertheless, much is to be gleaned from this volume, which places the very wide experience and knowledge of two well-known continental cardiologists at the physician's disposal. The clinical approach is a very welcome one, and the chapter on therapy is very informative. This book should find a well deserved place on the shelf of the practising physician.

A.J.B.

ADULT INTELLIGENCE

The Measurement and Appraisal of Adult Intelligence. 4th edition. By David Wechsler. Pp. ix+297. 40s. London: Baillière, Tindall & Cox, Ltd. 1958.

Wechsler's scale of verbal and performance tests is probably the best available for assessing intellectual level in adult neuropsychiatric patients. The age standardization has now been extended to include the clinically important range of 60 to 75 and over, and new chapters have been added dealing with the changes that occur in intellectual ability with age and consequent to brain damage. The problems of the assessment of deterioration, and the diagnostic significance of particular test signs, are discussed, and the book makes a useful contribution to our understanding of the effects of psychopathological disturbance upon intellectual function.

K.R.L.H.

PSYCHOPHARMACOLOGY

Psychopharmacology, Pharmacologic Effects on Behavior. Edited by Harry H. Pennes, M.D., D.Med.Sci. (Neurology), with 41 participants. Pp. xiii+362. 35 figures. $8.00. New York: Paul B. Hoeber, Inc. 1958.

This expensive American book is impressive both in its list of participants and its bibliography. It is a symposium and therefore has the style and language common to all symposia. It presents a broad coverage of both basic and clinical aspects of modern psychopharmacology, including much original work published for the first time. The verbatim records of the discussions held after each paper are a novel and refreshing innovation.

Its usefulness is restricted somewhat, in that the research worker will find himself more at home than the clinician in its pages of experimental results, graphs and other figures. The clinician, however, will be well rewarded by dippings into its pages.

It is rather a book for a medical library than for an individual's private bookshelf.

S.W.G.C.

BLOOD GROUPS

Blood Groups in Man. 3rd edition. By R. R. Race, Ph.D., M.R.C.S., F.R.S. and Ruth Sanger, Ph.D., B.Sc. Pp. xix+377. 31 figures. 42s. Oxford: Blackwell Scientific Publications. 1958.

A new edition of this well-known book can only be welcomed by everyone interested in blood groups. Once again we have an authoritative, accurate and yet absorbing and readable account of the subject. Since the appearance of the last edition something new has been learnt about all the blood groups, and this knowledge is included in the present volume. The inclusion of a short chapter of *addenda* at the end brings the book right up to date and allows the authors to refer to work published as recently as the first half of 1958.

Detailed descriptions of the 9 major blood-groups rightly occupy more than half the book, but adequate accounts of the less important 'private' and 'public' antigens, blood-group genetics with particular reference to linkage and heredity, and a brief chapter on methods employed, are also included. The recent work on Chimera twins is described and the chapter on blood groups and disease includes reference to blood groups in relation to susceptibility to disease. A noteworthy and commendable feature is the large number of useful references at the end of each chapter.

No laboratory engaged in blood grouping should be without this excellent book, in which not only the serologist but also the genetecist will find much of interest.

T.G.S.

SIDE-EFFECTS OF DRUGS

Schadelijke Nevenwerkingen van Geneesmiddelen. Supplement II. Door Dr. L. Meyer. Pp. 153. *f* 13.25. Assen: Van Gorcum & Comp. N.V. 1958.

This book, which appeared first in 1952 as *Side Effects of Drugs* represents a second supplement in Nederlands. It is a useful reference work, comprehensive and fully documented. The toxic effects that have been reported from the use of the latest drugs are briefly mentioned, e.g. chlorothiazide, phenmetrazine (preludin), bemegride, and many others. Older compounds are also mentioned, including agents no longer advocated in therapeutics, e.g. dinitrophenol. On p. 142 the statement that 'chloorthiazide kan hyperkalaemie veroorzaken' should obviously be corrected (hypokalaemie). Tolbutamide (p.114) has produced thrombocytopenia.

It is understandable that no book on toxicity of drugs can be complete. For the physician this book is nevertheless a useful guide in the use of drugs and in determining whether unexpected symptoms are due to the disease itself or to the side-effects of a drug.

N.S.

DISEASES OF THE LIVER

Diseases of the Liver and Biliary System. 2nd edition. By Sheila Sherlock, M.D. (Edin.), F.R.C.P. (Lond.), M.R.C.P. (Edin.). Pp. xvi+719. 213 figures. 57s. 6d. Oxford: Blackwell Scientific Publications. 1958.

There is no doubt that Sheila Sherlock's is the best monograph on liver disease. While not as comprehensive as some works of multiple authorship, it is very comprehensive and well written, and there is an excellent bibliography. In this 2nd edition there is valuable additional material on bilirubin metabolism, hepatic morphology and drug-induced jaundice, and a brief discussion of serum transaminase activity in the diagnosis of jaundice. Hepatic failure is fully considered; the section on management is highly practical. This is a very useful book, but one will often have to turn elsewhere for fuller discussion of many topics; this is as it should be, for Dr. Sherlock's book is one for everyday use and reference.

D.M.K.

CORRESPONDENCE : BRIEWERUBRIEK

DISTRIKSGENEESHEERSKAPPE

Aan die Redakteur: Ek het nie bedoel om 'n twisskrif in die *Tydskrif* te ontketen nie, en wil dadelik aan *Never Again*[1,2] erken dat ek saamstem met sy feite en bewering dat daar wel in baie gevalle uitbuiting is van Distriksgeneeshere en hulle dienste.

Dit was egter om Distriksgeneeshere aan te spoor om my te voorsien van die feite wat ek van hulle vra in my jongste omsendbrief, dat ek die brief wat op 25 April in die *Tydskrif* verskyn het,[3] geskryf het.

Nou is die feite dit dat, as gevolg van vertoë tot die Departement wat op statistiek berus het, ons wel in 1957 'n verhoging van bykomstige gelde verkry het. Tweedens is dit 'n feit dat, soos *Never Again* sê, daar nog uitbuiting is. Derdens kan 'n mens nie op 'n losse voet kla nie. As Distriksgeneeshere moet ons realisties wees, ons feite en statistiek reg hê, en dan op 'n redelike wyse vertoë rig, sodat die Departement van Volksgesondheid gewapen met statistiek die Tesourie kan nader om verhoogde gelde toe te staan.

Sover het ek slegs van 138 uit 'n totaal van byna 400 Distriksgeneeshere 'n antwoord ontvang, en ek voel nie geregtig om met slegs die ondersteuning van 35% 'n saak te gaan bepleit wat almal raak nie.

G. F. C. Troskie
Ere-Sekretaris, Vereniging van Distriksgeneeshere

Döngesstraat 18
Kroonstad
25 Mei 1959

1. Briewerubriek (1959): S. Afr. T. Geneesk., 33, 264.
2. *Idem* (1959): *Ibid.*, 33, 428.
3. *Idem* (1959): *Ibid.*, 33, 368.

TAALRUBRIEK

Aan die Direkteur: Ek dink dat almal verbonde aan die geneeskundige beroep die werk van die Taalkomitee van die Stellenbosche Geneeskundige Fakulteit met belangstelling en waardering sal dophou.

Ons moet saamstem met die voorstelle in die inleidende paragrawe van die rubriek. Ek wil egter pleit dat die suiwer Afrikaanse woord nie te maklik oor die hoof gesien moet word nie. Ons vakliteratuur ly nog dikwels aan geswollenheid en omslagtigheid deur die gebruik van woorde wat nie by die gewone taal kan aanpas nie.

Veral die voorgestelde vertaling van ‚curette' bring vir my bedenkinge. Die afleidinge van die Afrikaanse woord *skraap* is vir my volkome aanneemlik byvoorbeeld:

Instrument ..	..	skraper, uterusskraper, beenskraper.
Curettage ..	..	skraping.
Diagnostic curettage		proefskraping.
Curettings ..	..	skraapsels, proefskraapsels.

Vir ons Engelssprekende kollegas sal skraap weens sy ooreenkoms met *scrape* maklik verstaanbaar wees.

Ek wil voorstel dat die woord skraap met sy afleidinge tenminste as 'n alternatief vir kuret genoem word. Die taalgebruikers sal uiteindelik self kies watter woord meer aanneemlik is.

J. D. Visser

Posbus 445
Kimberley
26 Mei 1959